

COMPUTERWORLD

Unix's open systems crown up for grabs

By Jean S. Bozman
SAN FRANCISCO

When \$1 billion Alaska Airlines started buying turnkey systems to handle tour package applications, it did not go shopping for Unix.

But when Dan McDonald, director of data processing services at the Seattle-based airline, replaces his mainframe-based applications sometime in the next three years, he will likely choose a Unix server. "Nothing else is as fast, as scalable and as hardware- and vendor-independent," McDonald explained.

Since August, however, the airline has also been evaluating Microsoft Corp.'s Windows NT for a specific application. "I think NT is going to be something great," McDonald said. "We are testing it [along] with Microsoft SQL Server because we have a package that requires it."

Open systems mirage

Interviews with users across the U.S. last week revealed that open systems and client/server computing — not the Unix and Windows NT operating systems — are now the strategic goal for most information systems shops.

"We do not see Unix as being equal to open systems and vice versa," said Tsvi Gal, a vice president of information technology at Wells Fargo Bank in San Francisco. Windows NT, he added, is close enough to Unix that "if we could use the same tool set we do for Unix ... NT would join the family of open systems."

At the UniForum show, opening here this week, Unix vendors will be facing stiffer challenge, Unix, page 28

Losing steam

The number of users actively pursuing a Unix strategy dropped slightly from last year

IS YOUR SITE ACTIVELY PURSUING A UNIX-ORIENTED STRATEGY?	IS managers		LAN managers	
	1993	1994	1993	1994
Actively pursuing	34%	29%	53%	47%
Considering	6%	7%	11%	9%
Not pursuing	59%	60%	35%	43%
Don't know	1%	4%	1%	1%

RESPONSE BASE: 8,000

Source: 1993 and 1994 International Data Corp. Global Information Technology surveys

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PowerPC compromise in the works IBM/Apple accord could pose formidable challenge to Intel's supremacy

By Michael Fitzgerald,
Ed Scannell and Mark Halper

In a major boost for the PowerPC chip family, IBM and Apple Computer, Inc. are close to uniting behind one hardware standard, according to sources close to both companies.

While the agreement is not yet final, sources claimed the deal's completion is a question of when, not if.

The two companies are currently traveling down separate forks of the PowerPC road. Apple's newly introduced Power Macintoshes run System 7 and use the Nubus architecture, while upcoming systems from IBM's Power Personal Systems group and other vendors will adhere to the PowerPC Reference Platform, or Prep, specifica-

PowerPC junction	
Apple, IBM and Motorola are close to agreeing on a unified PowerPC hardware platform. Among the differences in their current platforms:	
IBM/MOTOROLA PREP	APPLE
Bus issues	
PCI bus	Nubus
AT bus support	No AT bus support
Printer connections	
Parallel port	Serial port or AppleTalk
Operating system	
Windows NT*, Workplace OS*, AIX	Supports System 7
Other major differences	
The way they handle memory access	
*Not yet available	

tion. Prep uses the Peripheral Component Interconnect bus. IBM will not support System 7.

"A common Prep means significant compromises for both companies," said one source close to the negotiations who asked not to be named. He and other sources said the final details of a unified Prep may not be hammered out until later this year.

Boon for users

A united PowerPC desktop platform would offer users the benefit of standard hardware, which should mean lower system prices, more vendor choices, better software availability and improved compatibility.

It will also greatly strengthen the PowerPC's hand against Intel PowerPC, page 16



Apple and IBM still seem to be on a common Unix path: Both are endorsing the Power Open environment, which will be based on AIX, IBM's version of Unix.

Layoffs due as Borland takes stock

By Computerworld Staff

Borland International, Inc. intends to quickly cut a "significant" chunk of its roughly 2,000-member work force as the first step in a campaign to stem spending and flatten management, said newly appointed Chief Operating Officer Keith Maib last week.

Another of Maib's early priorities, a spokesman said, will be to review all departments, programs and product lines to weed out redundancies and unprofitable ventures. Already, some observers are singling out Borland's spreadsheet and software suite efforts as markets that the company might exit.



COO Keith Maib will work closely with CEO Philippe Kahn to reduce expenses

The appointment of Maib, who resigned last week as a Price Waterhouse partner to assume his new post, is considered by some to be the struggling software developer's first serious step toward getting its management act together. The company "desperately needs grown-up management," said Curt Monash, an independent consultant in New York.

Spending spree

The bottom line, Maib said, is that Borland's spending is too high for the total sales the company has posted for the past 12 to 18 months. And that could have negative repercussions for

Borland, page 8

Jury out after Gerstner's first year

By Craig Stedman

■ While Louis V. Gerstner mostly draws praise for his first year as IBM's chairman, information systems executives said they want to see more concrete signs of change at the company now that the honeymoon is over.

As the anniversary of Gerstner's hiring approaches next week, he garners credit from most users and analysts for bringing a more open, results-oriented way of thinking to IBM.

But Gerstner still

needs to show that he can sustain IBM's profitability and start regenerating revenue despite significant declines in the mainframe business.

Customers are also waiting patiently for IBM to lay out a more detailed distributed computing strategy built around its AS/400 and RS/6000 lines — a process that could start this week when Gerstner meets

Gerstner, page 14

Getting to "Aha!"



OBJECT TECHNOLOGY is a bear. Executives don't understand it. Programmers don't want it. Learning it takes more time and money than anyone wants to commit. Managers have to develop new rules to manage it. With people issues like these, object technology's technical hurdles look easy.

To find out what Cigna Corp.'s John Burmaster has to say, see Management, page 99.



— Sandra L. Kurtzig,
founder of The
ASK Group, Inc.

"Being a woman gave me an advantage in business. Once [men] recognized that I was good at what I did, they figured I was probably better than most men because of all the B.S. I had to put up with."

In a MAN'S WORLD

FOR AN EXCERPT OF KURTZIG'S BOOK
SEE IN DEPTH, PAGE 115.

NEWS

■ **Sun's** barrage of spring announcements will include changes to the Solaris operating system that will ensure reliable backup of servers. *Page 4*

■ **Novell** will launch a consulting program designed to help corporations build enterprise client/server systems around its products. *Page 4*

■ **Lotus and AT&T** confirm that they are developing a public network service based on Notes. *Page 6*

■ **Compaq** runs into spot availability problems and readies a new desktop. *Page 7*

■ **IBM and Microsoft** face off with tools announcements at Software Development '94. *Page 10*

■ **The Clipper encryption scheme** catches flak from commercial users at the Information Systems Security Association's conference. *Page 20*

■ **Apple** takes small steps to spread its software to Unix platforms. *Page 24*

DESKTOP COMPUTING

■ **Graphics hardware makers** promise greater performance. *Page 47*

■ **Apple** pares PowerBook prices. *Page 47*

WORKGROUP COMPUTING

■ **PeopleSoft** runs into trouble porting its financial applications to the latest release of Sybase SQL Server. *Page 60*

Corrections

Due to an editing error, CSC Index was incorrectly identified as an outsourcing vendor in the article "Far-reaching impact" [CW, March 14]. The correct company is Computer Sciences Corp.

Two products were incorrectly identified in the article "Mainframers in transition" [CW, March 14]. PowerBuilder is from Powersoft, Inc. and KnowledgeWare is from KnowledgeWare, Inc.

ENTERPRISE NETWORKING

■ **Proginet** tries to provide single log-on and security administration for NetWare and mainframe environments. *Page 69*

LARGE SYSTEMS

■ **IBM** plans to support non-SNA networking in the next release of its IMS database management system. *Page 83*

APPLICATION DEVELOPMENT

■ Early users see benefits in both **distributed Object Linking and Embedding** and **OpenDoc**. *Page 91*

CAREERS

■ **Team experience** counts for a lot. If you've got it, flaunt it. *Page 119*

MARKETPLACE

■ Eight questions to ask **hub vendors** before you buy. *Page 129*

COMMENTARY

■ **Bill Laberis** warns that the technology-oriented CIO is in danger. *Page 42*

■ **Ted Krum** advises people to beware of broad industry alliances. *Page 43*

■ **Max Hopper** pleads for software upgrades that live within the corporate hardware manager's budget. *Page 43*

■ **Charles Babcock** says microkernel-based system software is on the way. *Page 6*

■ For all the neat things that imaging systems can do, why does **Ellis Booker** still get paper cuts? *Page 62*

■ **Hal Lorin** says that performance-tuning a mainframe just isn't worth it. *Page 86*

■ **Rich Finkelstein** says ODBC remains much ado about nothing. *Page 91*

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Executive Briefing

Large IS organizations are frustrated with Unix systems because of vendor bickering on standards, variations among systems and a lack of consistent system management software. While many have installed Unix systems as high-end enterprise servers and database engines, many are also willing to evaluate Windows NT, OS/2 and NetWare as alternate operating systems. *Page 1*

Successful object technology requires that everyone from company executives and departmental managers to IS managers and programmers reach the "aha! moment," the point at which they begin to grasp the subject. But there are some sizable obstacles to overcome before that can happen. Adopting object technology means struggling with major adjustments in outlooks and expectations throughout the company. *Page 99*

Ryder System, Inc. has claimed immediate benefits — including improved employee productivity, reduced paperwork and enhanced customer service — in the early stages of a \$33 million endeavor to re-engineer its vehicle maintenance processes via technological aids. *Page 12*

Power boosts and advances in graphics accelerators in the high-end workstation market make it easier for users to keep sophisticated applications on their workstations rather than buy time on a supercomputer. *Page 59*

Positioning itself for reforms in the health care industry, The Prudential Health Care System is implementing a frame-relay network to link its health care centers and enable physicians to share patient medical records and eligibility information more quickly. *Page 69* Another health care provider, Value Health, sees personal digital assistants and wireless two-way messaging as weapons against prescription drug errors. *Page 77*

Rosenbluth International, a \$1.7 billion travel services company, will get into the traffic monitoring business when it unveils a network operations center that tracks storms and events that could affect travelers booking trips through its 1,400 travel offices. *Page 12*

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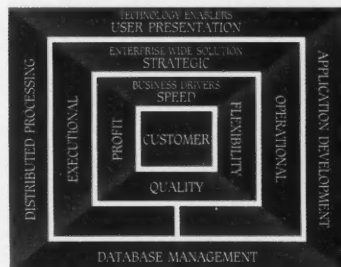
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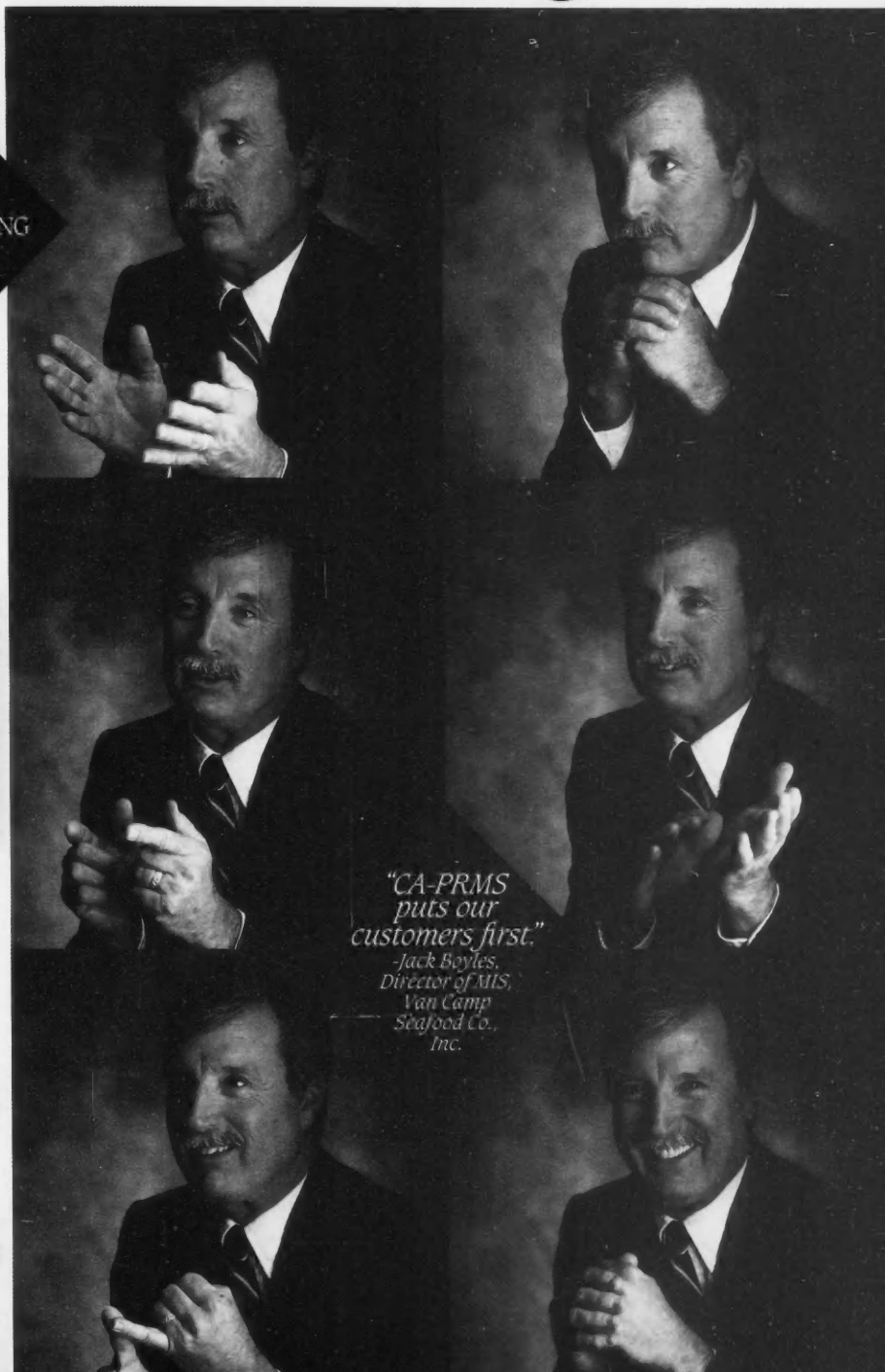
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*-Jack Boyles,
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Seafood Co.,
Inc.*

Sun servers target hosts

By Jean S. Bozman
MOUNTAINVIEW, CALIF.

In a push for market share in traditional information systems shops, Sun Microsystems, Inc. will make a series of announcements this spring intended to present Sun's Unix servers as reliable alternatives to mainframes.

The effort kicks off this week with the announcement of a 30G-byte redundant arrays of inexpensive disks (RAID) subsystem to ensure reliable backup and recovery of large relational databases.

At the same time, Sun executives said the \$4.3 billion firm is readying more service and support programs aimed at convincing corporate users that Sun can provide one-stop shopping for high-end Unix systems.

To extend Sun servers' reach to PC LANs, features will be added to the Solaris operating system to broaden support for Novell, Inc. NetWare clients and Windows PCs, according to SunSoft, Inc. President Ed Zander (see story below).

Users familiar with the vendor's plans said last week they are already getting the message about Sun's strategy to become a server supplier to corporate sites.

"What you're seeing is Sun really putting all of the little pieces in place as they transition from an

engineering workstation vendor to an enterprise server vendor," said Dave Bennett, vice president of information services at Dunkin' Donuts, Inc. in Randolph, Mass., which has two Sun 690 servers with 60G bytes of stored data.

To boost high-end applications, Sun and mainframe maker Amdahl Corp. have been working

manage 30G bytes of data. A performance-tuning utility, OpenTune, will be priced at \$24,000.

"The whole impetus to work with Amdahl was to gain access to enterprise customers," said Tony Iams, a research analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y.

To fill in key architectural pieces for enterprise systems in coming weeks, Sun executives said they plan to do the following:

- Introduce, but not ship, Solaris 2.4, a follow-on to the current Solaris 2.3, which has been enhanced for connectivity with PC desktop software. The release will synchronize the Solaris systems software for Sun's SPARC RISC hardware and Intel

Corp. machines running Solaris x86 software. Shipment is expected by August.

- Introduce a low-end graphical workstation, the SPARCstation 5, to compete with low-end Unix machines priced just under \$4,000 from Hewlett-Packard Co. Also set for unveiling is the SPARCstation 20, code-named Kodiak, a low-end Unix server with user-friendly software for system managers.

SPARCstorage Array Series 100	
Sun's new subsystem can store the equivalent of 16 million printed pages	
SUPPORTS:	RAID 1 (mirroring) RAID 0 (striping) RAID 5 (striping with parity)
CAPACITY:	31.5G bytes for \$50,900 6.3G bytes for \$24,900
DATA TRANSFER RATE:	Full-duplex 25M byte/sec.
AVAILABLE:	May 1994

since September to develop a more robust version of Solaris 2.x and to deliver it by summer. They are also working on systems management software that will work with the Sun servers and the new RAID subsystems, industry analysts said.

Last week, Amdahl announced two system management utilities for Sun servers. An enterprise file manager, A+UniTree, will ship in April, priced at \$7,000 and able to

Sun, Novell strike Unix royalty deal

By Jean S. Bozman
MOUNTAINVIEW, CALIF.

After months of negotiations, Sun Microsystems, Inc. said late last week it finally reached an agreement with Novell, Inc. to pay \$82.5 million for all future royalty fees owed for Unix System V Release 4.

Now that Sun owns the rights to the Release 4 code for its Solaris 2.x operating system, users can expect more aggressive pricing, Sun Chief Executive Officer Scott McNealy said. "We're a software company now," he said. "Before, we were more of an OEM integrator, and now we're more of a software originator."

Sun as software vendor

Sun's Solaris operating system will compete for desktop applications with Microsoft Corp.'s Windows, IBM's OS/2, Apple Computer, Inc.'s Macintosh and Novell's NetWare, McNealy said.

Novell was also pleased because the deal will help recoup some of the roughly \$350 million it paid last year for Unix System Laborato-



Sun CEO Scott McNealy: "If you'd told me two years ago it would only cost me \$82 million and a little patience, I never would have believed it."

ries, Inc., which created Unix System V with Sun.

"What we're doing is giving Sun full rights to do business with their version of Unix, called Solaris," said Mike DeFazio, executive vice

president and general manager at Novell's Unix Systems Group. "We still own the code."

The fee paid to Novell includes the right of Sun subsidiary SunSoft, Inc. to license the NetWare client—including the IPX/SPX protocol for NetWare LANs—and the NetWare code for Unix servers. That will broaden Sun servers' ability to host client/server applications on NetWare LANs.

"That was part of the plan, for Sun to be able to market Solaris free from paying royalties to Novell," said Jeffrey Canin, a research analyst at Salomon Brothers, Inc. in San Francisco. Before this agreement, SunSoft was able to sell Solaris source code to another computer vendor but had to share its royalties with Novell.

Sun is one of several Unix vendors currently negotiating a buy-out of royalties, Novell confirmed.

"This is just the first of many to come," said David Smith, an analyst at International Data Corp. in Framingham, Mass. "But the other ones probably aren't interested in the source licensing business."

Novell to launch consulting program

By Elisabeth Horwitt

Novell, Inc. is expected to use this week's Brainshare developers conference as a launching pad for a worldwide consulting program designed to help corporations build enterprise client/server systems and applications around Novell's server platforms and development tools.

The consulting program is part of a larger announcement that Novell will make this week concerning a major realignment and redefinition of developers programs that provide education and support to systems integrators, value-added resellers (VAR) and independent software vendors.

Initially announced as a pilot program at Brainshare '93, the Enterprise Developers Program will provide customers with ongoing consulting, project management and education services. The program has a strong emphasis on "helping customers deal with the complexity" inherent in Novell's enterprise-oriented products—NetWare 4.x, UnixWare and AppWare, said Willie Tejada, director of Novell's developer relations group.

The program is Novell's response to Microsoft Corp.'s 2-year-old Consulting Services offering. And it is long overdue, according to corporate systems managers who are finding Novell's traditional VAR-based support less than satisfactory for enterprise products.

Novell recognizes that it needs to boost the quality and range of its support beyond network services to applications, beyond the server to the enterprise and beyond Novell-only offerings to whatever mix of distributed computing products a corporation needs, Tejada said.

Toward that end, Novell will tap a number of high-end and regional systems integrators to complement its internal technical staff in providing support and guidance to corporate developers, Tejada said.

Unraveling AppWare mysteries

Boston Edison Co. would like to see a "knowledge transfer" process in which consultants educate its internal programmers about the mysteries of the AppWare client/server application development tools, said John Dubiel, manager of planning and technology at the Massachusetts utility.

"VARs don't work. They are more interested in the network side of the world," he said. "They don't help you develop and tailor applications."

Cheryl Grossman, senior technical analyst at Transamerica Financial Services, added, "It would be great to get help as we migrate to NetWare [4.01]." The Los Angeles financial company currently has 18 NetWare servers, "and the project is too much for us to handle internally."

Grossman wanted to know, however, what the cost of the service would be and how large an account would have to be to qualify. Other special Novell support arrangements, such as the Master Licensing Agreement, are available only to mega-NetWare shops.

The base fee for joining the Enterprise Developers Program is \$7,500, according to Frank Dzubeck, president of Communications Network Architects, Inc. in Washington.

Novell lately has shown its determination to span the distance it has created with customers by leaving support to the dealers, said Frank Mishnoff, a software analyst at Prudential Securities, Inc. in New York.

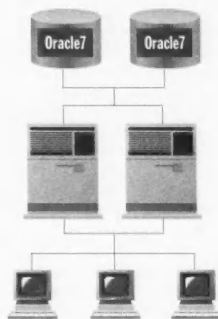
The Enterprise Developer Program is also a potential revenue producer in that it allows the vendor to "build up demand for its products by direct marketing to customers," he noted.

Pumping up

NetWare, Novell's CompuServe-based on-line user forum, is another area in which the vendor is moving to beef up support. The company is focused on weak areas such as application development and NetWare connectivity products, a Novell spokesman said.

Oracle7 Parallel Server: Breaking the Single Server Limit.

Applications built using a first-generation client/server database cannot access data on more than one server computer without a lot of extra programming. In contrast, the Oracle7 Parallel Server database enables applications to access data on multiple server computers just as if all the data was stored on a single server. Which is one reason why 9 out of the top 10 Fortune 500 companies run Oracle7 on their parallel systems.

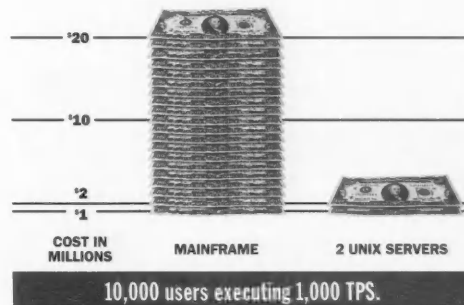


Speed and Scalability

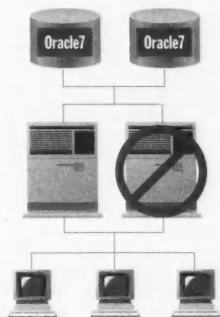
Performance is increased simply by adding another server. Two UNIX servers running Oracle7 were independently certified as supporting 10,000 users running 1,000 TPC-A transactions per second.

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Microkernels are in your future

Many computer science theorists believe the microkernel approach to operating systems offers special advantages for the distributed systems that organizations will need in the future. But microkernel architectures are not fully understood in IS circles.

Microkernel systems, with names like Amoeba, Chorus and Mach, to date run in largely experimental or academic environments, and their production virtues remain to be seen.

Nevertheless, in the next two years microkernel systems for servers will start popping up, offering greater compatibility with clients — if not actually running on the client as well. The Open Software Foundation will implement a microkernel approach in its next version of OSF/1, and Sun Microsystems, Inc. wants to introduce SpringOS, a microkernel version of Solaris. Unix Systems Labs, now part of Novell, is working on a system based on xChorus 3.0, a French-built microkernel Unix. Both Taligent (IBM and Apple) and IBM's Workplace OS are being built on the Mach 3.0 microkernel from Carnegie Mellon University.

In effect, the microkernel approach is an attempt to usher computing into its next phase, client/server, by using fewer lines of code to supply greater functionality. How can this be? Haven't MVS, Unix, VMS and even Windows NT grown into conglomerates whose lines of code strung end to end would rival the borders of Third World nations... with budgets to match?

Nevertheless, that is the heart of the argument for microkernels. Less is more — more flexibility, more distributability and more scalability. Excess mechanisms have been stripped down to a core of efficient, low-level function. This core is easy to port across hardware platforms because of its size and simplicity. The Chorus microkernel, for example, needs only 55K to 60K bytes of memory.

At the same time, microkernels are big. Just because the core has been reduced doesn't mean numerous system services can't exist outside the kernel, where they may be called by it. In Chorus, services such as file managers, device drivers and network services exist outside the kernel as servers that are activated by a message passed to them.

This message-passing is a drawback to the microkernel approach in that it is less efficient in executing function calls. As discussed in this column Feb. 21, Windows NT exhibits many aspects of a microkernel system, but because Microsoft wanted to maximize its networking efficiency, it built those services into NT's executive on top of the kernel, bulking it up.

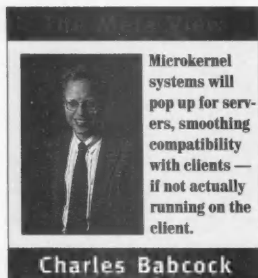
Andrew Tanenbaum, the noted networking and operating system authority, says in his book *Modern Operating Systems*, "The small amount of time required to send a message and get a reply (typically one-thousandth of a second) is usually negligible. As a consequence, it is likely that microkernel systems will gradually come to dominate the distributed systems scheme, and monolithic kernels will eventually vanish or evolve into microkernels."

In addition to client/server, there is a second reason why microkernel systems will come to dominate the future of computing.

Running massively parallel systems has always been bedeviled by the need to supply intelligence to each processor element without weighing it down with a full-bore operating system. The microkernel approach offers at least part of the answer; indeed, when Cray Research brought out the T3D supercomputer it put its Unicos operating system on a vector processor closely coupled to a parallel processor running Unicos microkernels.

By the end of the decade, the almighty microkernel is likely to be synonymous with client/server operating systems, parallel processing and management of networked objects.

Babcock is *Computerworld's* technical editor. His MCI Mail address is 575-2737.



Microkernel systems will pop up for servers, smoothing compatibility with clients — if not actually running on the client.

Charles Babcock

Collabra offers key Notes features

By Lynda Radosevich

■ **Collabra Software, Inc., a Mountain View, Calif., start-up, today will unveil Collabra Share, a groupware package said to provide an organized, electronic discussion forum that runs across the leading LAN- and host-based electronic-mail systems.**

The package is intended to give users a more open and lower-cost alternative to some of the key features found in the Lotus Development Corp. Notes environment.

While offering discussion database, tracking and security capabilities similar to those found in Notes, a primary difference is that Collabra Share forums can operate across multiple E-mail programs, such as Lotus' CC:Mail, Microsoft Corp.'s Mail, Digital Equipment Corp.'s All-In-1 and IBM's Professional Office System (Profs), said Collabra President and Chief Executive Officer Eric Hahn.

"With Notes, I'm not aware of any way to do that using your existing mail packages," said Mark Penwell, a senior systems analyst at Whirlpool Corp. in Benton Harbor, Mich. Whirlpool, a Profs and CC:Mail site, has assisted Collabra in usability testing.

Another important difference that provides cost savings, is that Collabra Share is a finished application, unlike Notes, which is more of a development platform. As such, Collabra Share does not require programming, dedicated support staff and separate application servers, analysts said. With the lower support costs, and at \$69-per-node list price, Collabra Share is less expensive than Notes, which lists for \$495 per node.

Customers who have Notes implementations can use Collabra Share as a low-cost method of

extending Notes, users and analysts said.

Collabra Share "looks good because we need to manage the discussions that go on within a project," said Craig Metzler, director of information services at Pacific Marketing Group, a marketing services agency in San Francisco. "We already have CC:Mail, and we don't want to devote a developer to Notes."

End users can access the forums using the Windows-based Collabra Share client software, which ties into their messaging system. Or, if they do not have the Collabra Share client software, users can set up their E-mail client software to search, send and receive the discussion information, according to Hahn, a former CC:Mail vice president.

Automatic E-mail updates

The Collabra forum can reside on a file server or in a peer-to-peer network. To enable users outside of a workgroup to participate in discussion, administrators can set servers up to exchange updates via E-mail at regular intervals using an \$899 server extension.

Also, users can add agent technology that feeds information from electronic news services into the forum for \$899 per server.

Several companies, including Avery Dennison, Fannie Mae and Whirlpool, said they are interested in testing the product to share information within their organizations.

For instance, Whirlpool will beta-test Collabra Share later this year with the idea of setting it up as the groupware application for business communications among, for example, those involved in product development, Penwell said.

While user enthusiasm is high, some potential beta sites said they still needed to see how the security features worked before they would commit fully to implementing Collabra Share.

Public service runs over Notes

By Lynda Radosevich and Ellis Booker

■ **Lotus Development Corp. and AT&T last week confirmed plans to codevelop and market a public network service based on Notes. Called AT&T Network Notes, the new service will be offered early next year.**

Pilot tests will get under way in the third quarter at customer sites such as Price Waterhouse and Johnson & Higgins, according to Lotus President and Chief Executive Officer Jim Manzi.

AT&T Network Notes will be based on an updated version of Notes currently under development. The new version will have enhanced administration and auditing capabilities and will run over an AT&T frame-relay service that supports dial-up and dedicated access from LANs and PCs, officials from both companies said.

Business and government organizations will be able to use the service like a "business Internet" to share and exchange multimedia



Alex J. Mandl, CEO of AT&T's Communications Services Group, says pricing will be competitive with forums on the Internet

Up, up and away

Although reports of the deal had already driven Lotus stock above \$70 a share a month ago, public confirmation of the deal drove it even higher to close at \$85.50 on Thursday.

information across geographically dispersed areas, Manzi said.

As an added plus, the companies can use the Notes development tools to build customized applications, such as a knowledge database that customers can access. Also, the service will provide security and billing services not available on the Internet, Manzi said.

While Lotus rival Microsoft Corp. does not have a similar arrangement with AT&T, it "absolutely is not out of the question with AT&T or others," said Tom Evsln, general manager of server applications at Microsoft.

While both companies declined to discuss pricing, Alex J. Mandl, CEO of AT&T's Communications Services Group, said it would be competitive with setting up comparable forums on the Internet.

Putting the Notes servers into AT&T's hands will relieve organizations from the cost of supporting and staffing their own Notes networks. However, analysts noted that users have been reluctant to hand over management of sophisticated data services to carriers.

Shortages return as Compaq readies high-end releases

By Michael Fitzgerald and
Jaikumar Vijayan

■ **As Compaq Computer Corp. readies new high-end desktop PCs, some customers report that the company's notorious availability problems have returned, though they are not as bad as last year. The company confirmed some delays.**

Compaq, along with most major players in the industry — notably the IBM PC Co. and Apple Computer, Inc. — suffered severe backlogs from mid-1992 through the first half of 1993. Compaq appeared to have a handle on this in the second half of 1993 but now seems to have slipped again.

"We're back to our availability problems with Compaq," said Glenn Jurmann, section manager of office technology at Baxter HealthCare Corp. in Deerfield, Ill. He said the problems go beyond the high-end portables and server product shortages that have plagued Compaq and much of the industry, moving into broader supply issues with desktop products.

Coming soon

Compaq's new DeskPro/XL will offer a new direction for the company on the desktop, starting with a new bus. Features will include:

- PCI bus
- QVision 2000 graphics
- Built-in Edivert (integrated)
- Optional CD-ROM drives
- Five slots
 - 1 PCI
 - 1 PCI/EISA combination
 - 3 EISA

While Jurmann termed the availability issues "spotty," William Y. Tauscher, chairman and chief executive officer of Computerland Corp., said, "Compaq is in horrible trouble." He added that Compaq executives have told him that the company's product supply will improve by the end of next month.

A Compaq spokesman confirmed that there were "some backlogs" with certain configurations. "Availability does continue to be a challenge, but it is not a crisis," he said.

What are we waiting for?

Models currently in short supply are the DeskPro/M and ProLinea models that use the 33-MHz i486DX processor. The spokesman said Compaq is about one month behind demand on both lines. For the DeskPro/M, which is soon to be replaced, users will likely be shifted to the coming DeskPro/XL line when that appears early next month. The spokesman declined to comment.

The new upgradable line will feature 486 and Pentium configurations and will drop Compaq's TriFlex architecture in favor of the Peripheral Component Interconnect (PCI) local bus. Compaq will also

update its QVision graphics architecture and Business Audio.

One source said Compaq has likely shifted production from the M to the XL line already, which may explain the delays. Compaq declined to comment.

Not all users have had problems getting systems.

"We haven't had any troubles getting

desktops," said Glenn Sandusky, chief information officer at Aon Specialty Group in Chicago.

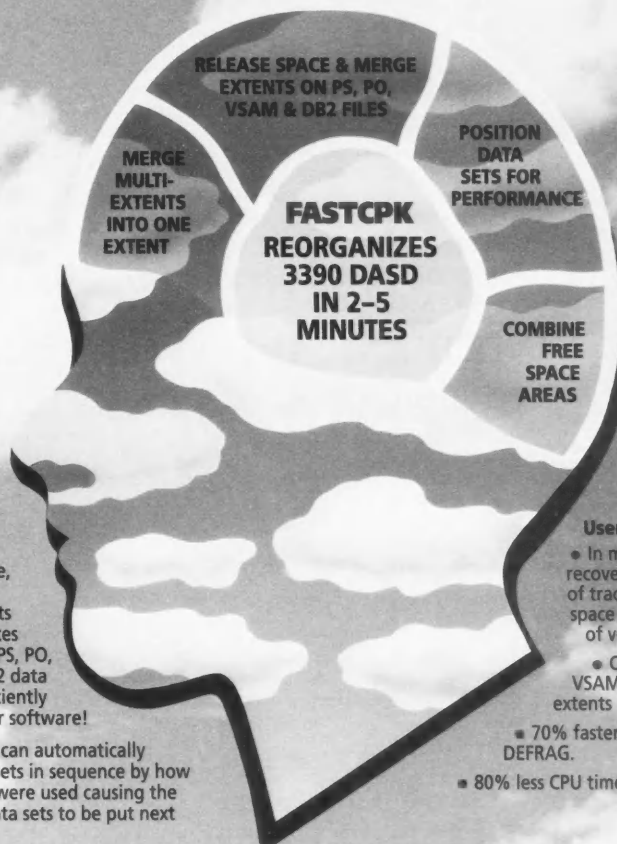
Another user, Douglas Murphy, director of information systems at Philadelphia-based Comcast Corp., said he has not experienced availability problems with Compaq desktops but anticipates them soon. "Any time [Compaq] intro-

duces a new product line or announces new prices, we usually have delays," he said.

The XL series will use PCI as a local bus, running over the Extended Industry Standard Architecture (EISA) bus.

Early Pentium release catches vendors off guard. See page 47.

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//DASD1 DD VOL=UNIT=
//SYSIN DD *
          DDNAME(DASD1)
```

→ SIMPLE CONVERSION →

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//SYSPRINT DD SYSOUT=*
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          COMPACT TYPE=FASTCPK,VOL=TS0001
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Borland

CONTINUED FROM PAGE 1

the sales and marketing groups, according to several Borland insiders and an analyst who requested anonymity.

Further, some product lines and marketing projects — including Borland Chief Executive Officer Philippe Kahn's wish to drive into corporate information

systems shops — have pulled the firm in scattered directions, observers said.

For example, initiatives such as the Quattro Pro spreadsheet and a software suite marketing deal with WordPerfect Corp. "are not Kahn's forte," said Donald A. DePalma, an analyst at Forrester Research, Inc. in Cambridge, Mass. Efforts to diversify mean "Borland is under assault from an even bigger variety of sources now," DePalma said.

Hiring Maib, who led a team of 10 Price

Waterhouse consultants contracted last month to identify Borland's weak spots, shows that Kahn is "taking the right steps to correct problems before something dramatic happens, like big losses," DePalma said. Kahn is said to have encouraged recruiting someone to focus on daily operations so he can concentrate on technology issues and planning.

The impending layoff has employees on edge. As much as 30% of the staff could be dismissed, two Borland insiders said.

Maib declined to comment on the specifics of his planned staff reductions.

Several sources inside and outside Borland sketched out candidates ripe for cuts or de-emphasis, including:

- Marketing dollars spent on promoting software suites that pick up "only crumbs left behind by Microsoft and Lotus," as DePalma put it.
 - Development resources for PC end-user applications under construction but not yet shipping.
 - Money spent on positioning Interbase as a stand-alone server database for IS users, instead of as an integrated part of Borland's database family, which includes dBase and Paradox.
- Likely to be untouched in any cost-cutting move is Borland's answer to Microsoft's popular Visual Basic development tool set, a product expected in June.
- Maib declined to comment on whether specific projects will be eliminated.
- Culturally, Maib said he must "eliminate some old, tired habits." Too many people but not enough thought mar Borland's decision-making process, he said.

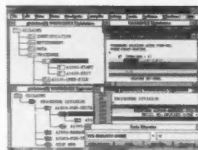


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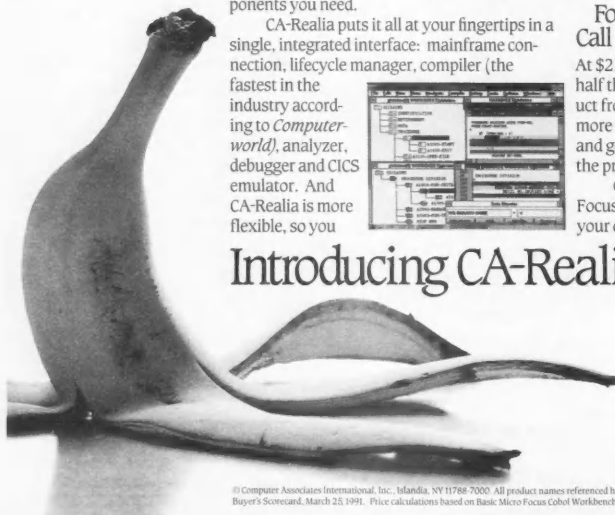
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Microsoft revamps

By Stuart J. Johnston and Ed Scannell

Microsoft Corp. last week reorganized in an effort to sharpen its customer focus and clarify its product strategies. The company has been restructured around "missions" rather than products, resulting in the formation of seven divisions within its products organization.

In a memo to employees, Chairman Bill Gates said Microsoft needs to spend much more time with customers and must "put ourselves more in our customers' shoes and ensure [that] the sum of our offerings serves the spectrum of their needs."

Mike Maples, one of two executive vice presidents and a member of the triumvirate that runs the company, will head up five of the new product divisions. These include personal operating systems, business systems, desktop applications, developer groups and consumer groups.

The other two product divisions, advanced consumer technology and on-line services, will be headed by research wunderkind Nathan Myhrvold, senior vice president of advanced technology.

Under Maples will be Paul Maritz, senior vice president of systems, who will be in charge of both personal and business systems divisions.

Maritz will be responsible for the digital office systems group, which is promulgating the At Work operating system for office equipment such as fax machines and printers.

A second group created by the reorganization sets up three customer units: one that targets end users who make purchasing decisions; an Organization Customer unit that includes the consulting, Solution Providers and Certified Professional programs; and OEMs, which will not change. The company's technical support arm, Product Support Services, will also remain the same.

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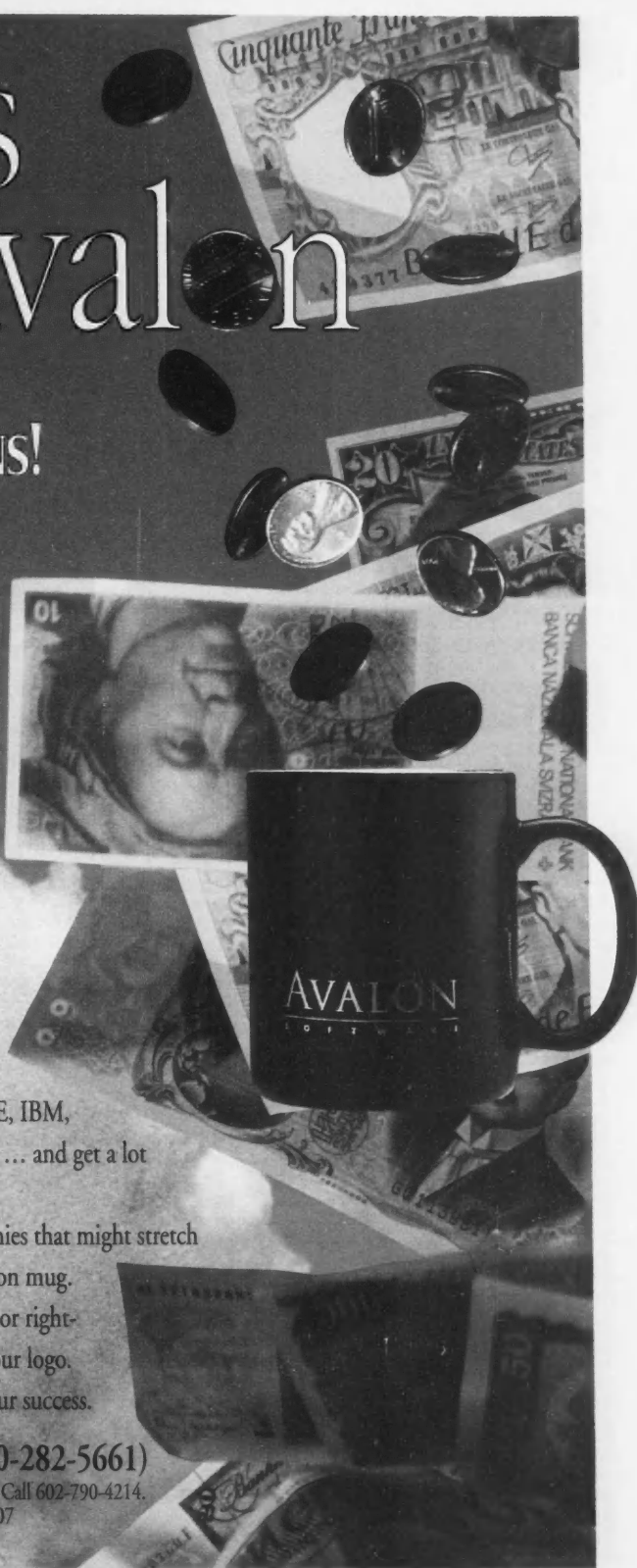
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News Shorts

Brooktrout wields patent weapon

Brooktrout Technology, Inc. in Needham, Mass., said it won a U.S. patent for Direct Inward Dialing, its method of routing incoming faxes to specific workstations on a LAN. The fax board vendor then filed a lawsuit against competitor **GammaLink, Inc.** in Sunnyvale, Calif., claiming infringement on the new patent. A GammaLink spokesman said the firm has no comment until it sees the lawsuit.

HP lowers workstation prices

Hewlett-Packard Co. last week cut prices by up to 20% on its HP 9000 Series 700 workstation line. A fully configured Model 715/50 is now priced at \$12,905, down from \$16,175. A fully configured Model 715/75 is priced at \$15,605, down from \$18,195. And the higher-performance Model 725/50 was cut to \$15,905 from \$19,175. HP also added midrange and high-end models to its family of NetServer PC servers, with prices starting at \$3,349. HP introduced internetworking performance monitoring and troubleshooting software and hardware based on products from Metrix Network Systems, Inc., which HP bought last May. Called Net-Metrix 4.0, the applications run on HP or Sun Microsystems, Inc. network management platforms.

DG to sell CA-Unicenter

Data General Corp. and **IBM France** have inked separate agreements with **Computer Associates International, Inc.** to distribute CA-Unicenter systems management software. CA-Unicenter for Avion, the systems management package for DG's Unix server platform, is currently in beta testing and is expected to ship in the second quarter. DG will bundle the product with its Avion servers for a 120-day free trial.

CA prepares client/server line

CA said it will deliver client/server versions of its CA-CAS and CA-PRMS manufacturing packages. CA-CAS/Unix for HP's HP/UX is expected to ship by late summer. The three-tiered package, which includes a Windows-based front end, will cost approximately \$40,000 for a 50-user license. Client/server extensions to CA-PRMS, an IBM AS/400-based manufacturing suite, have begun shipments, starting with Sales Analysis Workbench, a decision-support system.

IBM's ATM calendar

Speaking at the Networked Economy Conference in Paris last week, **IBM Executive Vice President Ellen Hancock** laid out a time line for the company's introduction of Asynchronous Transfer Mode products. IBM will release an ATM controller this month, another controller during the second quarter, an ATM hub by early fall and an ATM switch by year's end.

SHORT TAKES James P. O'Brien, 46, was named vice president, systems and information processing at **Consolidated Edison, Inc.** in New York. He was formerly assistant vice president for employee relations at the utility... **PowerPC News**, an electronic magazine published by London-based **Internet Publishing Ltd.**, will now be available free of charge to worldwide users of the Internet. To subscribe, send a message to "add@power.globalnews.com"... **Electronic Data Systems Corp.** and **Dun & Bradstreet HealthCare Information** have formed a strategic alliance to provide analytical information on treatment effectiveness and health care performance... **AT&T Global Information Solutions** and **IBM** have agreed to jointly market disaster recovery services and provide cooperative support to each other's disaster recovery customers.

More news shorts, page 16

Vendors jockey for control of object-oriented development

By Melinda-Carol Ballou
SAN JOSE, CALIF.

■ The battle for control of the object-oriented future continued last week at Software Development '94 with a spate of announcements from key players that seek to set the agenda for this nascent market.

Headlining the show were dueling tool announcements from Microsoft Corp. and IBM, as expected [CW, March 14].

According to Microsoft, the release of a Control Development Kit (CDK) that includes the ability to create OLE Custom Controls — also known as OCX — will greatly assist developers creating Object Linking and Embedding (OLE) applications [CW, Jan. 17].

Beau Riedel, a software engineer at Tencor Instruments, Inc., a semiconductor vendor in Mountain View, Calif., said the OLE controls represent a "modular way to go about programming and delivering components which will... lead to reusability at a much higher level."

Custom controls are preprogrammed groups of code that handle specific functions. Developers can incorporate these controls rather than create code from scratch. The 16-bit Visual Basic Controls (VBX) have already spawned a healthy market with about 500 independent software vendors.

Covering all the bases

Microsoft is taking the same concept and applying it to OLE with the CDK. It will initially be offered as an add-on to Visual C++ 1.5 for creating 16-bit applications and to the next version of C++ for 32-bit controls. The kit is scheduled to ship in the second quarter, and pricing will be announced then.

For developers who have incorporated VBXs and want to migrate them, Microsoft is supporting an option that will let them create a VBX template from which they can then build OLE controls, officials said.

"The OLE controls are very important right now

since Microsoft is not supporting VBXs under the 32-bit platform and you need some way of doing them," said Larry Harris, technical manager at Quick America Corp., a market data provider in New York.

Riedel added that migrating the VBX controls will not be a major issue for his group because they only used them for prototyping, "but for some people it will be a major concern."

Despite CDK's migration facilities, some observers agreed.

"Even with the new controls, [CDK will initially require] programming in C++, and you don't want the average [developer] touching it unless they know what they're doing," said Judith Hurwitz, president of Watertown, Mass.-based Hurwitz Consulting.

"VBXs are nice and straightforward. OCXs are real complex, and I think that Microsoft would have been better off layering a 32-bit interface on top" of the VBXs," said Richard Smith, president of Phar Lap Software, Inc., a software vendor located in Cambridge, Mass.

Setting the standard

Microsoft officials said they chose to offer the OLE controls because OLE is becoming a de facto industry standard. While VBXs can be accessed only through Visual Basic, the OLE controls will be accessible via any application that supports OLE.

In addition, Microsoft announced multiplatform support for Visual C++, which will run on some RISC-based platforms in addition to Intel Corp. platforms.

And for developers targeting multiple operating systems, a cross-development version of Visual C++ due in the first half of this year, will allow a single source code base written to Microsoft Foundation Classes and the Win32 API to run on both Windows and the Macintosh operating system.

Meanwhile, IBM announced its SOMobjects for Windows, with support for interoperability between IBM's Distributed System Object Model (DSOM) and Microsoft's OLE. IBM also said developers will be able to create DSOM-compliant applications using Microsoft's Visual C++ tools. Several additional tool vendors — including Easel Corp. and Symantec Corp. — pledged to incorporate DSOM into their software, bringing the number of DSOM-committed independent software vendors to 18.

Reporter's Notebook

A combination of theatrics and solid product announcements characterized the Software Development '94 conference in San Jose last week.

Next Chairman Steve Jobs highlighted the ongoing struggle for control of the object-oriented computing environment in his keynote address. After making extravagant claims about the dominance of Next's OpenStep and Sun in the upcoming fight with Microsoft and IBM/Apple's Taligent, Jobs portrayed Microsoft as an "Evil Empire" and illustrated his point with a *Star Wars* clip in which Luke Skywalker destroys the Empire's space station. Microsoft, on the other hand, used a James Bond motif for its Visual C++ announcement.

IBM's Personal Software Products group will bundle Borland's C++ 1.5 with OS/2 2.1. C++ 1.5 includes an ObjectBrowser that graphically shows the relationship between objects and allows devel-

opers to more quickly navigate through their code. Priced at \$149, it includes a free copy of OS/2 2.1.

Symantec unwrapped a compiler for the Macintosh with migration tools for PowerPC and talked up "breakthrough" technology said to allow C++ developers to interactively browse and navigate through programs. The compiler will also have a "distributed make" cross-platform development facility.

LBMS, purveyor of Windows-based CASE and process management tools, is integrating its Systems Engineer application development tool with Microsoft's Visual Basic tools.

Oracle announced WorkGroup Server, which consists of Oracle 7 RDBMS, stored procedures and triggers and desktop features, such as support for Microsoft's ODBC. The Software Development Kit for Oracle Server is priced at \$995 for two users and \$2,995 for 10 users.

—Melinda-Carol Ballou and Ed Scannell

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Intersolv (Excelerator) 15%	Intersolv (Excelerator) 9%	KnowledgeWare, Inc. (Information Engineering Workbench) 24%	Intersolv (Excelerator) 11%
Texas Instruments (Information Engineering Facility (IEF)) 13%	Computer Associates (CA-REALIA) 8%	Computer Associates (CA-REALIA) 5%	Texas Instruments (Information Engineering Facility (IEF)) 11%
Computer Associates (CA-Tellon) 7%	Visible Systems Corp. (Visible Analyst Workbench) 8%	Cadre Technologies, Inc. (Tosca) 3%	Computer Associates (CA-REALIA) 5%

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Ryder re-engineers for the road

By Thomas Hoffman
NEW BRUNSWICK, N.J.

■ As part of an ongoing effort to reduce costs, outrun competitors and foster customer satisfaction, Ryder System, Inc. last week showcased early results from a comprehensive set of re-engineered automated maintenance processes.

The service, called Ryder Fast Track Maintenance Service, is aided by mobile computing technologies. It is the first in a two-year series of forthcoming re-engineering initiatives from the Miami, Fla.-based truck leasing and rental firm.

The \$4.1 billion transportation company plans to roll out the new service to its 915 commercial leasing and services maintenance facilities across the U.S. and Canada by June 1995. This represents a \$33 million investment in information technology and business process redesign.

Ryder anticipates a two-year payback period from the investment, said Tom Hjertquist, vice president of maintenance at Ryder's commercial leasing



M. Anthony Burns, Ryder chairman, president, chief executive: "Re-engineering is critical to us..."

and services division.

"Re-engineering is critical to us as we look forward to the future — and we need to take advantage more than ever before of information technology," said M. Anthony Burns, chairman, president and chief executive at Ryder System.

Analysts were impressed with the early results of Ryder's re-engineering activities. "This [automated maintenance service] could put Ryder out in the forefront of the transportation industry," said James J. Dowling, a transportation analyst at Furman-Selz, Inc. in New York.

The maintenance systems have helped Ryder cross-check the level of its fuel tanks each day against the recorded amount they have dispensed to determine if there are any tank leaks. With such automated fuel transactions, Ryder attendants have more time to conduct 10-point vehicle inspections.

At Ryder's New Brunswick, N.J., service island, for example, employees logged a 550% efficiency gain in the first month of re-engineered operations, said Paul Broadhurst, a 27-year Ryder veteran and a New Brunswick

district maintenance manager.

Tractor-trailer drivers transporting new cars for one of Ryder's largest leasing customers — General Motors Corp.'s Saturn division — have been using touch-screen computer stations on vehicles for the past 18 months. In addition to providing readouts of environmental engine conditions to drivers, the onboard systems are used to confirm pickup and delivery of vehicles to Saturn showrooms with its plant in Spring Hill, Tenn.

Easy to use and get used to

Jerry Sullivan and Freddy Marshall, a team of Saturn drivers, said they were initially reluctant to use the computer system.

"At first, I thought, 'Man, they're gonna be lookin' over my shoulder at everything I do,'" confessed Marshall. But both men have put any concerns they may have had about Big Brother to rest. "It's made my job a lot easier, and the computer's simple to use," Sullivan noted.

To support these initiatives, Ryder last month committed an additional \$22 million to surround its IBM mainframe and IBM AS/400-based infrastructure with distributed client/server systems. Those include Microsoft Corp.'s Windows NT server operating system, Novell, Inc.'s NetWare network operating system and Powersoft Corp.'s PowerBuilder applica-

tion development tool set.

Ryder's sales and marketing re-engineering initiative is the catalyst for the company's information systems overhaul, noted Dennis M. Klinger, vice president of MIS at Ryder Truck Rental, Inc. But he cautioned that the redesign of business processes has to be considered before any technical modifications are made.

"It's the business processes that have to change, and it's the technology that's just an enabler," Klinger pointed out.

Keep on truckin'

Guaranteed Overnight Delivery, Inc. (G.O.D.) said last week it will outfit its fleet of 125 trucks with pen-based computers with wireless modems to streamline delivery and pickup processes.

G.O.D., in Kearney, N.J., will replace a paper-based system with Fujitsu Personal System, Inc.'s PocketPad Plus 1.6-pound pen computers and computerize its routing system.

Via integration with a global positioning system, G.O.D. expects dispatchers will be able to more efficiently route its trucks, which operate in 15 states.

—Michael Fitzgerald

Candle shifts to client/server

By Elisabeth Horwitt

■ Candle Corp. is expected tomorrow to detail plans for making its long-awaited move off mainframe system management to where the action is — the client/server systems management market.

This week at UniForum 1994, the Santa Monica, Calif., software vendor will unwrap its Availability Command Center, which is a set of applications built on an object request broker (ORB)-based architecture. The applications will manage a broad range of server platforms, Candle Chairman Aubrey Chernick said.

The initial offering will manage Sun Microsystems, Inc.'s SunOS, Hewlett-Packard Co.'s HP/UX, IBM's AIX and Microsoft Corp.'s upcoming Daytona version of Windows NT, Chernick said.

Big plans

Microsoft and Candle are working out details of a joint development relationship to provide Candle's platform with full management of NT through Microsoft's Hermes management interfaces, Chernick said. Candle plans to extend its platform to manage IBM's AS/400 by the second half of this year and to OS/2, Windows and Novell, Inc.'s NetWare by the first half of next year, Chernick added.

The Availability Command Center is the first commercial product to make use of Candle Technology, an underlying ob-

ject-based infrastructure that supports Posix and the Open Software Foundation's Distributed Computing Environment, as well as the Object Management Group's Common Object Request Broker Architecture (CORBA), Chernick said.

Using this technology, agents residing on managed systems can be instructed to automatically notify the management station.

Climbing into the ring

Candle's announcement will put it in the same ring as Tivoli Systems, OpenVision, HP, IBM and Legent Corp., all of which are working on ORB-based platforms that will eventually manage a range of client and server systems.

Last week, Candle and Legent announced joint development of ORB-based agents that will let Simple Network Management Protocol and CORBA-based platforms manage database management systems [CW, March 14].

However, Candle will differentiate itself by enabling Availability Command Center to manage business applications such as payroll. It will also monitor those applications' activities in popular transaction processing environments such as CICS and Transarc Corp.'s Encina, Chernick said. Transarc is the other major partner Candle will announce this week.

Good reviews for object technologies. See page 91.

Customer service

Tracking system aids travelers

By Allan E. Alter and Mitch Betts

Rosenbluth International, a \$1.7 billion travel services company, this week will unveil a network operations center that acts as a kind of global traffic helicopter.

By tracking storms and breaking events that could affect travelers, the Philadelphia operations center will help

Rosenbluth's 1,400 travel offices steer its customers away from airport delays, cancellations and sold-out flights and hotels.

"Travelers feel hostage to the airlines, to the weather, to things out of their control," said Hal Rosenbluth, president and chief executive officer at Rosenbluth. "What they are missing is the information to make decisions."

By monitoring CNN and the Weather Channel, the center's three-person staff keeps abreast of breaking news and spreads it via broadcast fax bulletins to most corporate clients. Rosenbluth offices will obtain the information via electronic and voice mail.

Information about local events that could impact travelers, such as conventions, holidays and parades, will also be

available through Rosenbluth's reservation system.

"When a company calls and says it wants to send an employee to New Orleans, the system tells the agent it's Mardi Gras, and they may want to change their plans," said Diane McFerrin Peters, the center's manager.

Although the company declined to provide specific technical details on the network operations center, the systems involved include an IBM ES/9000 mainframe, IBM AS/400s and automatic call distribution technology from AT&T.

The technology to transmit E-mail and fax bulletins is not very sophisticated, but this application of it will give Rosenbluth a competitive edge in customer service, said Robert Langsfeld, president of Langsfeld & Associates Ltd., a San Diego travel systems consultancy.

The agency's edge may be short-lived, however. "This is something other people will copy rather than ignore," he said.

The center will also monitor Rosenbluth's worldwide corporate network and telephone systems and shift calls from one office to another, Peters said.



Hal Rosenbluth, president and CEO, will offer a service to travelers held hostage by bad weather

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Gerstner

CONTINUED FROM PAGE 1

with financial analysts in New York.

The pluses include improved communication with customers, an overhaul of senior management and attention to cost-cutting that put IBM back in the black in the fourth quarter last year.

"He brought a whole new line of thinking to IBM," said Tod Dixon, vice president of information resources at Northeast Utilities in Hartford, Conn. "IBM was mired in its traditional approach to marketing and products, and he came in and showed them somebody new was in charge."

"The thing I would rate Gerstner high-est on is that he has the guts to stand up

set in motion.

"It's wonderful to have these mutual conversations [with Gerstner and other IBM executives], but not all of the consultations have come to results," said Tom Loane, vice president of computers and communications services at Alamo Rent a Car, Inc. in Fort Lauderdale, Fla.

"At the top, I think Gerstner has done a good job [of changing attitudes], but he's got to keep driving to put in a new culture all the way through the company," said James Matsey, corporate IS director at Reynolds Metals Co. in Richmond, Va.

For example, the Gerstner message does not appear to have reached all of IBM's field operations. Sam Gross, manager of advanced technology integration at Cigna Corp. in New York, said it took IBM "well over 120 days" to prepare for a recent consulting and services project.

"I'm not sure if [the need to compete] has filtered through their culture," Gross said.

Pleasantly surprised

Stan Johnson, director of MIS at Worldport LA in Los Angeles, had a better experience with a bid that IBM submitted two weeks ago on a disaster-recovery project. Johnson said he expected only a token effort because IBM had been "essentially nonresponsive to us" in the past, but the company turned in an "outstanding" proposal.

"They spent a lot of time in the last six months trying to understand the business here," said Johnson, who had switched to Amdahl Corp. mainframes because of IBM's lack of interest. "If that's a sign of Gerstner, then I'm all in favor of him."

Some users also expressed concern about reductions in the number of sales and technical support workers, although they said they have not seen a drop-off in the quality of service thus far.

Shipment delays on PS/2 servers and ThinkPad color notebooks remain a black mark, Loane noted. "If they could

deliver those, they could knock everybody dead. But it doesn't matter if you can't buy them," he said.

Gerstner gets perhaps the most praise for what he did not do: follow through on an Akers' plan for splitting IBM into multiple autonomous units.

"Turning that around was the best decision he's made," said John Wood, vice president of computer and network services at the Royal Bank of Canada in Toronto. "Breaking the company up would have made things tough for IBM and tough for customers."

Wall Street analysts are generally optimistic about IBM's ability to stay profitable, although at reduced levels compared to the past. Consensus estimates call for earnings of about \$50 million in the first quarter and \$1.3 billion for 1994 as a whole. In 1993, IBM lost \$8.1 billion.

Many IBM watchers believe the firm is also starting to show glimpses of a renewed strategic direction. "They're not asleep at the switch in terms of where the industry is going," said Sam Albert, a consultant in Scarsdale, N.Y.

Skeptics remain

However, not all observers are sold on Gerstner. Curt Rohrman, a securities analyst at First Boston Corp., said Gerstner and his management team have done "a fabulous job" reducing costs but are "absolutely dropping the ball" when it comes to straightening out IBM's product strategy.

"I don't see where they're really even starting" on a transition from propri-

Anniversary report card

Users and analysts grade Louis V. Gerstner on his first year at IBM

John Wood, vice president, Royal Bank of Canada, Toronto:

"He's put more of a business head into IBM, which is what it needs."

A

Charles Ferguson, consultant, Cambridge, Mass.:

"On everything that requires a fundamental understanding of the business he's in, we think he's basically doing it wrong."

D+

M. Lewis Temares, vice president and CIO, University of Miami:

"He's heading in the right direction in reconfiguring IBM. [But] changing culture takes years to inculcate and get down to the user level."

I*

Bob Djurdjevic, consultant, Phoenix:

"Gerstner's impact on IBM has been positive for the most part. But so would have been that of almost any qualified outsider. Now he has to perform on his own merit."

B+

Tom Loane, vice president, Alamo Rent a Car, Inc., Fort Lauderdale:

"One quarter does not a profit picture make. They have to show they can sustain it."

I*

Curt Rohrman, financial analyst, New York:

"Cost-cutting is the first step, and he's executed pretty well on that. But DEC two years ago and IBM today are unbelievably in parallel."

B-

*Incomplete



IBM Chairman Louis V. Gerstner returned IBM to profitability

in front of the user groups, explain what he's doing and allow the crowd to take its best shots," said M. Lewis Temares, vice president and chief information officer at the University of Miami. "That's an admirable trait."

Gerstner is "more responsive" to users than was predecessor John Akers, Temares added.

Despite such praise, Temares and several other IS officials interviewed last week said Gerstner must be given an incomplete grade because they have yet to see many benefits from the changes he

etary systems to distributed computing, Rohrman said. Loyal mainframe customers appear to be staying with IBM, due in part to "inertia," he added. "But [less devoted] customers, I believe, are walking away."

Eric Singleton, information technology director in the Orange County property appraiser's office in Orlando, Fla., is one example. Singleton replaced his IBM 4381 mainframe with Compaq Computer Corp. servers and PCs 18 months ago and is not looking back. "Other vendors serve our needs pretty well," he said. "We're really not that dependent on IBM anymore."

Even those impressed with Gerstner note that he will have his hands full trying to get IBM in a position to win such customers back. "There are an awful lot of question marks," said David Andrews, a consultant in Cheshire, Conn. "He's passed the first pop quiz, but he hasn't made it to exam time."

Senior correspondent Thomas Hoffman contributed to this story.

SNA, LAN integration skips external router

By Stephen P. Klett Jr.

SNA/LAN integration over the wide area became easier and more affordable last week with the unveiling of products from Sync Research, Inc. and Hypercom, Inc. The products are said to provide legacy SNA networks with access to corporate LANs via frame relay without requiring external routers.

Sync's FrameNode 400 is an access device for remote SNA sites. It merges the data traffic of IBM host networks with Token Ring and Ethernet LAN traffic for transport over a frame-relay-based wide-area network. Hypercom's product — a software module for its Integrated Enterprise Network line of multiplexers — provides a similar capability.

The key element in both methods is that they allow native transport of SNA traffic over frame relay directly to an IBM front-end host.

Observers said this "routerless" strategy could cut SNA internetworking costs by as much as 60% and boost network performance by as much as 40%, depending on the size of the network.

Router complexity

In contrast, a router-based scheme requires that SNA data be encapsulated in the Internet Protocol for transport over a dedicated line. This method is both complex and expensive.

First, a router is required on each end of the line. Second, the encapsulation process adds complexity in the form of processing overhead that can result in packets being dropped. This can cause session time-outs, which translate into delayed network response times.

"Router-based solutions are really not suitable for SNA environments," said Tom Nolle, president of CIMI Corp. in Voorhees, N.J. "By eliminating the routing function entirely, SNA users will definitely see better network response times."

Observers lauded Sync and Hypercom's strategies for their simplicity.

"Neither product requires a forklift upgrade — they will work transparently with users' existing branch networks, which is key because no one wants to upset the applecart," said Frank Dzubeck, president of Communications Network Architects, Inc., a consultancy in

Washington.

However, analysts said Sync's product may have an edge over Hypercom's in

terms of simplicity because Hypercom's product relies on a router that is integrated in its multiplexer chassis for protocol translation. "When you pull back the covers, Hypercom's product is really a router," Dzubeck said.

Attractive option

Laura Deets, a LAN manager at Aon Specialty Group in Chicago, was intrigued by Sync's offering. FrameNode "sounds like a very interesting product that could really fill a need for us in connecting our small, remote SNA user sites with the corporate LAN," she said. Aon had been looking at dial-in PCs and communications servers for this function, which either were not robust enough or affordable, she said.

The FrameNode 400 is slated to ship in May in branch-office and central-site versions that start at \$4,000 and \$12,000, respectively.

Hypercom's Multiprotocol Node software module is available now, starting at \$2,200.

SNA has more

According to consultancy CIMI Corp., there is six times more SNA traffic than TCP/IP traffic on average in large corporations today.

Aldus/Adobe merger to foster desktop synergies

By Stuart J. Johnston

Aldus Corp. and Adobe Systems, Inc. last week announced merger plans that will create a half-billion-dollar company focused on authoring and publishing electronic information. The merger will create one of the five largest desktop software firms in the U.S.

The new company will be led by Adobe's executive team, with Aldus founder Paul Brainerd joining the board.

Both users and analysts hailed the merger. "It's [going to] take desktop publishing to the next level and give users the tools to do their own electronic publishing," said consultant Jerry Schneider, past president of the Washington Capital PC Users Group.

"There are very few downsides to it" for users, said Colin Carpi, president of Chartwell Advisory Services, Inc. in Penn Valley, Pa.

The merger should create many synergies in electronic publishing — particularly in areas such as the use of audio and video clips in on-line documents, sharing

documents over a network and CD-ROM technology, said Jack Gold, an analyst at Meta Group, Inc. in Westport, Conn.

The two companies will benefit by gaining the combined financial strength needed to play in today's more competitive markets, said Jesse Berst, editor of "Windows Watcher," an industry newsletter in Redmond, Wash.

The merger is also expected to help ensure success for Adobe's Acrobat document interchange technology. "Aldus will provide Adobe with a great channel through which to get Acrobat onto hundreds of thousands of desktops," Gold said. "I expect them to move very quickly to put it into the [Aldus] products."

Acrobat lets one user send an electron-

ic document to others who have disparate platforms and applications and lets them see, contribute to and print the document in an identical format.

The merger is expected to be completed by mid-July, giving the combined firm cumulative sales of more than \$520 million. Adobe last week reported sales of \$81.25 million on earnings of \$15 million for the first quarter of fiscal 1994.

Feds pick Adobe CD-ROM tools. See page 49.

Compuware to buy Uniface

By Melinda-Carol Ballou

Compuware Corp. in Farmington Hills, Mich., last week said it will buy Uniface Holding B.V., a merger that will unite Compuware's mainframe systems management and services capabilities with the Dutch developer's fourth-generation language client/server product line.

No significant organizational changes are planned for Uniface, which will operate as a subsidiary of Compuware, company officials said.

Under the terms of the deal, Compuware will issue some 6.7 million shares of its stock, valued at \$290 million, to Uniface shareholders on the day of the agreement.

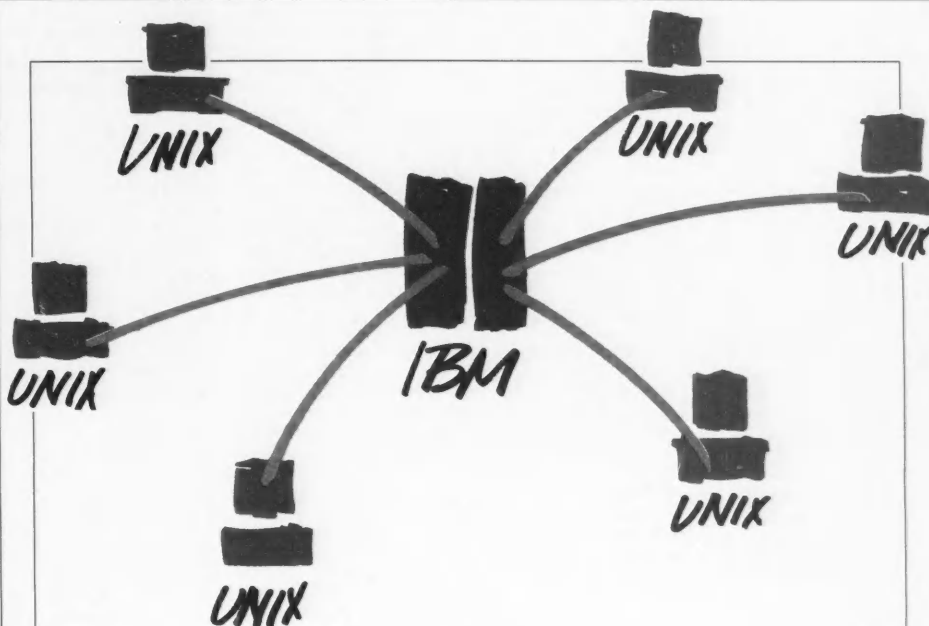
Client/server unit added

The merger, the third in a series for Compuware, enables Compuware to add a client/server division to its mainframe products and professional services divisions. The new unit will incorporate Uniface products and tools from client/server software start-up Ecosystems, Inc., which was acquired by Compuware last year. Former Uniface President Bodo Douque will manage that division.

Industry analysts were upbeat about the potential synergies of the Compuware/Uniface merger.

"Uniface brings to Compuware one of the best application development environments for client/server and a strong European base," said Joe Farley, an analyst at UBS Securities, Inc., a New York investment firm.

Uniface unveils retrieval tools. See page 92.



If only
it were this simple.

Linking remote UNIX systems to IBM hosts can be a challenge. There are many issues to consider:

- Do you have a traditional SNA/SDLC network, or do you use other technologies such as TCP/IP, APPN, Token-Ring, X.25, or satellite communications?
- Do your UNIX systems serve or link to LANs? Are there SNA gateways for these LANs?
- Do you process interactively (3270, 5250), in batch (RJE), or both?
- Do you use program interfaces such as HLLAPI, CPl-C/APPC/LU6.2, and LUA/LU0?
- How do you manage your network? How do you distribute programs, files, and data to your remote UNIX systems?

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News Shorts

EDS wins travel agency job

Electronic Data Systems Corp. last week inked a 10-year outsourcing deal with **USTRavel**, a \$2.4 billion travel agency. Estimated values ranged widely, from \$500 million to \$1 billion. The contract calls for EDS to take over voice and data networks, to migrate and consolidate hardware and software and to develop and implement new systems to support ticketing, reservations, data collection and other operations.

Xerox close to choosing outsourcer

Xerox Corp. said it could make its outsourcing decision as early as this week. Two weeks ago, the company eliminated a team of **Computer Sciences Corp.** and **Andersen Consulting** from the bidding in favor of finalists EDS and a team of IBM's **Integrated Systems Solutions Corp.** (ISSC) subsidiary and AT&T. Estimated values for a potential eight-year deal range between \$2 billion and \$4 billion.

Outsourced workers win \$9 million

A U.S. District Court judge in Boston last week awarded more than \$9 million to 480 former employees of **Blue Cross/Blue Shield of Massachusetts** because they were denied severance pay and benefits when the insurer outsourced its computer operations to EDS in January 1992. "This judgment confirms that the rights of employees must be considered when a business desires to reduce costs through outsourcing," said the plaintiff's attorney, Stephen M. Perry in Boston.

Low-priced FoxPro update to ship

Microsoft Corp. will ship updated editions of its **FoxPro** database management system for DOS and Windows by early April, officials said last week. The company will also continue the low-ball pricing it began with its Access database by selling the basic editions of FoxPro 2.6 for \$99. Professional editions will cost \$695. FoxPro 2.6 features improved integration with **Borland International, Inc.**'s dBase.

IBM seen eyeing Ethernet shift

IBM last week announced nine networking products including a low-end Ethernet switch, Token Ring adapter cards, Token Ring and frame-relay bridges and enhancements to its **BridgeManager/6000** and **RouteXpander/2** management software. Prices range between \$225 and \$6,995. While the bulk of the products focus on Token Ring, analysts said the inclusion of an Ethernet switch may indicate IBM is considering shifting its networking strategy away from Token Ring to the more popular Ethernet topology.

Computerland to change name

Computerland Corp. will tomorrow unveil a name change reflecting its new corporate focus in the wake of its sale of its franchisees to **Merisel, Inc.**, as well as outsourcing deals worth \$200 million with **Microsoft** and **IBM**'s ISSC. Computerland would not say what its new name will be. While it will continue to sell PC hardware, the new company's main thrust will be to land deals to manage the procurement, management and support of PC equipment for major corporations.

SHORT TAKES **Berdy Medical Systems, Inc.** in Rochelle Park, N.J., last week introduced a "smart card" for medical records that will be mass-marketed on cable television in New York. For \$29.95, the Berdy SmartCard holds 8,000 characters of medical history.... **Computer Associates International, Inc.**'s CA-Unicenter for **Hewlett-Packard**'s HP 9000 Series 700 workstations has entered beta testing.

Video networking standard backed

By Stephen P. Klett Jr.

A handful of vendors, including some industry heavyweights, aligned last week behind National Semiconductor Corp. and an emerging multimedia networking standard that could bring multi-point desktop videoconferencing to market by the end of this year.

Based on isochronous Ethernet (IsoEnet) technology from National Semiconductor, the networking topology is tailored to deliver video-based services over the wide area for such uses as health care and virtual classrooms.

Uses existing wiring

IsoEnet is similar to Asynchronous Transfer Mode technology (ATM) in its ability to handle voice, video and data traffic. However, a benefit it offers over ATM is that it works with standard 10Base-T cabling, which means users do not have to invest in a new wiring scheme. But, like ATM, it requires users to install new adapters in hubs and PCs and update applications such as software drivers.

IsoEnet separates 10Base-T cabling into two data pipes: One pipe dedicates 6M bit/sec. of bandwidth to video, and the second carries 10M bit/sec. of data (see chart). The video bandwidth is divided into 96 Integrated Services Digital Network channels that transmit fixed-length packets at constant speeds [CW, Aug. 23, 1993]. It is under standards consideration by

the Institute of Electrical and Electronics Engineers, Inc.

While an exact timetable for product rollout was not available, the first IsoEnet-ready PCs and network adapters will be available in the fourth quarter, National Semiconductor said. Initial IsoEnet deployment costs are expected to range from \$1,500 to \$3,000 per seat and are projected to fall to sub-\$700 price levels by 1998.

like National has been on its own," said Richard Kohn, a senior analyst at In-Stat Research in Phoenix.

Each of these vendors will offer a different piece of the IsoEnet network. When the pieces are fit together, the network will allow for up to three users connected by 30 frame/sec. video and audio to share an application and data with Super VGA images that are 25% of

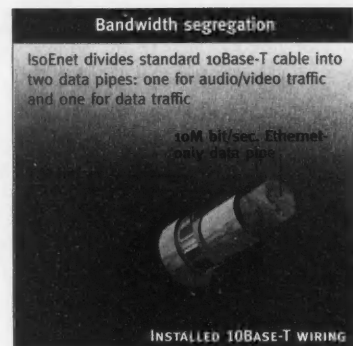
actual screen size.

Desktop videoconferencing is well-suited for the health care industry.

For example, Kaiser Permanente Hospital in Oakland, Calif., has installed room-based videoconferencing facilities that now connect roughly 40 Kaiser locations. At first the rooms were just used for meetings but "now we're looking at do-

ing things like tap into specialists in another domain during surgery" via computer screens in the operating room, said Bob Bodine, director of audiovisual and videoconferencing at the hospital.

Eventually, Bodine said the technology may enable doctors to make "virtual" housecalls via computer to remote locations that do not have hospitals or clinics.



At the Cebit show in Hannover, Germany, last week, **Microsoft Corp.**, **Apple Computer, Inc.**, **IBM**, **Ascom Timeplex**, **AT&T Microelectronics**, **Pacific Bell**, **Siemens AG**, **Ericsson Business Networks AB** and **Zydacron, Inc.** announced plans to develop a range of IsoEnet products.

"This vendor support is critical because up until now it's appeared

PowerPC

CONTINUED FROM PAGE 1

Corp., analysts said, especially if it means users can run their software without worrying about the hardware incompatibilities.

"Can it run System 7 on an IBM system?" asked Randal Giusto, an analyst at BIS Strategic Decisions in Norwell, Mass. "If it means that, it's a good deal for end users and [independent software vendors]."

A unified strategy "would be great," said Rich Davis, a technical consultant at Pacific Bell in Sacramento, Calif. "We have some organizations that are using Apple and some using MS-DOS machines, so maybe they can meet in the middle." Davis said his firm is interested in what IBM does with the PowerPC because of its price/performance vis-a-vis Intel's Pentium chip.

Pieter Hartsook, editor of "The Hartsook Letter," said it behooves Apple to establish a platform that would permit System 7 to run on IBM machines. "They need to shut

Microsoft out of the PowerPC platform," Hartsook said. "It already owns the Intel platform."

A key step forward on the software side could come soon. Sources said Apple and IBM also are negotiating to have IBM license its **WorkPlace OS** microkernel to Apple, which would then layer in its own interface and services on top.

"IBM and Apple have been talking a lot lately and not just about Prep but on the software side as well," said one source close to the talks. "They realize they need each other."

At loggerheads

Negotiations among the PowerPC partners, including **Motorola, Inc.**, have been marked by a certain rancor, including one stale-mate earlier this year that resulted in Apple temporarily walking away from the table, sources said.

Observers said these kinds of delays were to be expected.

An Apple spokeswoman said, "We continue to talk to IBM about evolving the PowerPC reference platform to incorporate Macintosh features and other advanced tech-

nologies to establish a new PC definition." Apple will replace its Nubus architecture with the Prepprescribed PCI in its next-generation Power Macintosh systems, as the company announced last year, the spokeswoman noted.

If Apple grabs a significant amount of market share with the Power Macintosh before IBM gets off the blocks with its own PowerPC-based systems, Apple may win some architectural compromises at the bargaining table.

"I think [IBM] will have a tough time establishing their PowerPCs in every quarter except the high-end enterprise, where Apple will need help eventually," said Will Zachmann, president of Canopus Research, Inc. in Duxbury, Mass.

"But Apple will have no trouble establishing volumes on the desktop," Zachmann said.

A bridge is also being developed that will accommodate both parties' first-generation PowerPC desktops. Hartsook noted that time-to-market pressures could mean that as a near-term solution Apple would port System 7 to IBM's first PowerPCs.

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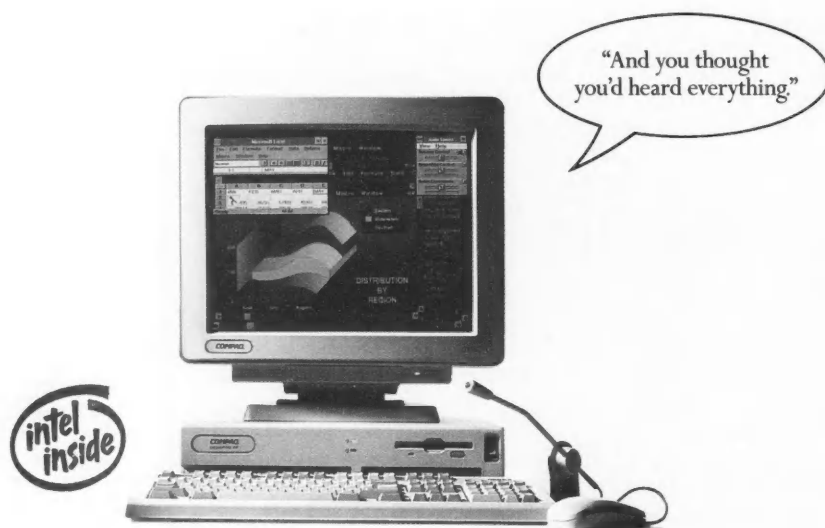
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Users blast government encryption plan

By Gary H. Anthes
SAN FRANCISCO

The federal government's proposal to make the Clipper encryption scheme an industry standard came under fire from commercial users at the Information Systems Security Association's (ISSA) annual conference here last week.

Potential users said their customers would not trust Clipper. They also said Clipper would lead to a loss of competitiveness overseas and expose them to legal liabilities they could not control. Most said they will not use Clipper, but some worried the government may eventually outlaw alternate forms of encryption.



Clipper is a microchip that contains a secret algorithm, dubbed Skipjack, developed by the National Security Agency to protect unclassified, but sensitive voice and data telephone communications. Users would be required to give the

keys to unscramble encrypted information to two federal agencies to be held "in escrow" and used by law enforcement agencies in court-approved wiretaps.

"Current government proposals do not meet valid commercial requirements for cryptographic security," the 2,000-member ISSA said last week in a position paper condemning the proposal. It also called for extensive talks between federal policy-makers and commercial users.

Sandra M. Lambert, information security vice president at Citicorp, said the key/escrow concept has merit but is fatally flawed in the Clipper proposal because the government would hold the decryption keys. A recent proposal from MIT — in which keys are held in escrow by multiple parties, some in the private sector — would be preferable, Lambert said. "We don't feel other alternatives have been explored," she added.

An information security official at another large bank, who asked not to be identified, said opposition to the government's proposal was among the "Top 2 or 3 items" on his security agenda. He said any use of Clipper by the bank would put it at a disadvantage abroad because foreign governments and competing banks would not use it. Also, no overseas customers would entrust highly confidential data to a system readily tapped by the U.S. government.

Security concerns

The bank official said sooner or later some security breach would occur — leaving the bank without legal remedy. "You can't sue the government; this puts us at an unacceptable risk," he said. "All a bank sells is trust, and if our customers can't trust us, we've lost our customers."

The ISSA shares that view. "Given the last 10 years of espionage history ... at some point the system will be compromised," the association warned. "This is clearly not an acceptable risk for potential commercial users."

The ISSA also said Clipper's secret algorithm and hardware-only implementation raised concerns among potential users about unverified claims for security. That will inhibit use, especially internationally, the ISSA said.

The Clinton administration has taken pains to point out that the key/escrow encryption standard is voluntary and that other more popular forms of encryption will not be banned, except from export in some cases.

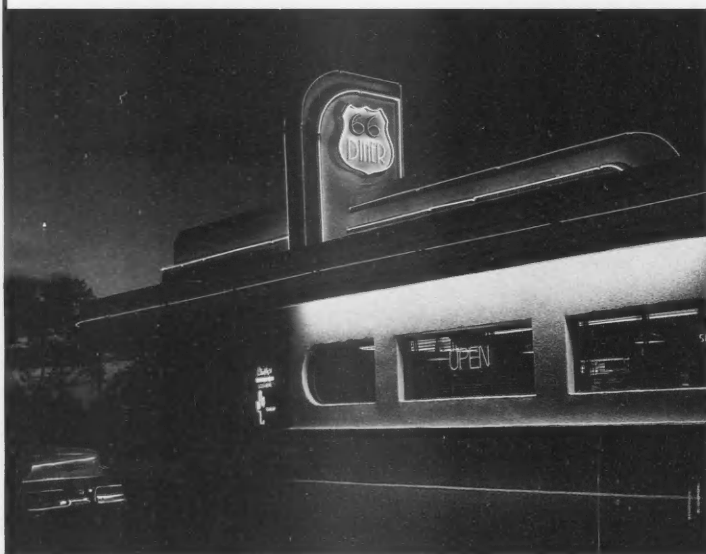
However, users were not reassured last week when an influential computer security expert called for the outlaw of encryption schemes that cannot be cracked by law enforcement and intelligence agencies. "We have to make strong, nonescrow encryption a crime," asserted Donn Parker, senior consultant for information security at SRI International in Menlo Park, Calif.

Parker said law enforcement agencies, civil libertarians and vendors have been well-represented in the Clipper debate so far, but users have been strangely quiet. That silence could be traced to a failure of information security specialists within companies to explain to top management what is at stake.

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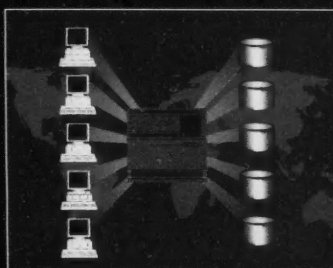
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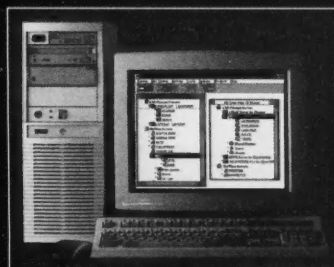
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T o W o r k

digital

Apple apps to run on Sun, HP boxes

By Mark Halper

Apple Computer, Inc., which is entertaining visions of licensing its System 7 operating system to PC makers, last week took a smaller step toward spreading its software to other camps.

Apple said it will soon begin shipping

emulation software that allows many Macintosh applications to run on certain Sun Microsystems, Inc. and Hewlett-Packard Co. Unix platforms.

The first version, called Macintosh Application Environment (MAE), will not support Apple's own AppleTalk network, however. Unix machines will communi-

cate with Ethernet-equipped Macintoshes through a Network File System (NFS) protocol running over TCP/IP, Apple said.

MAE marks the first Macintosh-for-Unix emulator from Apple. Third parties, including Andataco, Inc. in San Diego and Quorum Software Systems, Inc. in Menlo Park, Calif., already provide emu-

lators based on binary interfaces. MAE, however, is based on source code.

Apple said MAE will be available next month for \$549 and will require HP's HP/UX Unix Version 9.0 or Sun's Solaris Version 2.3. It will not, however, run on SunOS, the widely-installed version of Unix that Solaris is replacing.

Although Apple said most Macintosh software will run on MAE, it has verified only 50 software programs that pass muster. Morris Taradalsky, Apple's Business Systems division vice president, said many others will also run on MAE.

Apple, Sun and HP declined to provide performance figures comparing Macintosh application speeds in their native environment with emulation on the Unix platforms. The companies said performance varies with system configuration and software.



Conspicuous absence

MAE will not run over IBM's AIX operating system. IBM said it plans to support Macintosh applications using a different technology — the Power Open Association's Macintosh Application Services — in the next version of AIX, which will ship later this year.

At one beta site, Bose Corp. in Framingham, Mass., the jury was still out on performance. "If the performance is good, we certainly would consider using it," said Dave Lustig, manager of network services. Bose uses Sun and HP workstations for engineering and design. The firm

also has about 2,000 Macintoshes, which it uses for business applications.

Lustig noted that while MAE does not support AppleTalk, it would improve his Apple-to-Unix networking because it would enable program swapping over NFS.

Making it easier

Brian Connes, manager of the information center at DHL Airways, Inc. in Redwood City, Calif., said MAE will make several new applications available to Unix users.

"Our project managers have to run off to a public Mac to run project management software, and if they could run the same software on their HPs, it would be easier to do their job," Connes said.

Noticeably absent from last week's announcement was IBM, which joined hands with Apple, Sun and HP last May in announcing its intention to support Apple in tailoring Macintosh software to the IBM AIX operating system.

Like DHL, Creative Artists Agency, a Beverly Hills, Calif., talent agency, is a mixed shop, running Sun and Apple machines.

"Our Sun users are jealous of all the applications available in the Mac world," said IS director Michael Keithley. "Once in a while they would like to run a Microsoft Word or Excel; this would let them."



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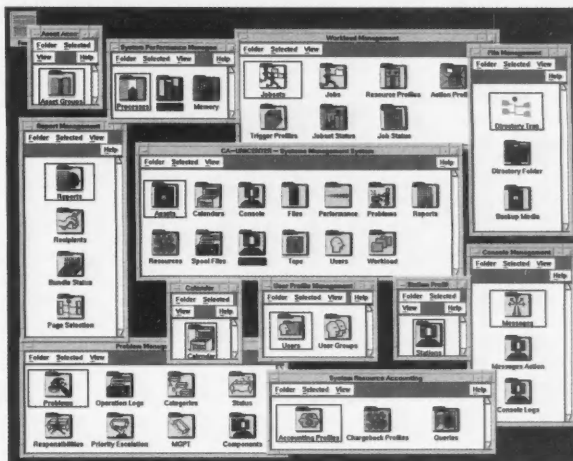
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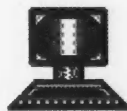
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Unix

CONTINUED FROM PAGE 1

lenges than ever before. In the world of client/server systems, the attraction of Unix as a one-stop shopping solution for interoperability is fading.

The lack of user enthusiasm for Unix, fueled by years of frustration over vendor bickering, arcane commands and the lack of mainframe-class systems management software, is surfacing more frequently now in market surveys (see chart below).

"Unix is just a means, not the end," Gal said. "The definition of 'open' for us is the ability to get to the data anywhere and the ability to port critical applications across a heterogeneous environment."

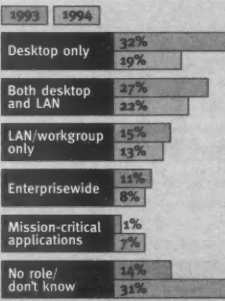
Among the highlights expected at UniForum are the following:

- The merger of two rival groups: the Cambridge, Mass.-based Open Software Foundation (OSF) and the homeless Common Open Software Environment (COSE) group of Unix vendors. SunSoft, Inc. President Ed Zander last week confirmed the long-rumored merger, which aims to streamline Unix vendor efforts to set common application programming interfaces between products [CW, March 7] and present a more united front against Microsoft.
- The preview of an International Data Corp. (IDC) survey of 300 users showing more realistic expectations for NT (see chart above) and a continued strength of Unix in its traditional markets, which include mission-critical commercial applications.

Pick and choose

Users considering a future with Windows NT are showing more uncertainty than confidence

IN WHICH ENVIRONMENT DO YOU SEE WINDOWS NT PLAYING A ROLE?



USER BASE: 1993, 150; 1994, 300

Source: International Data Corp., Framingham, Mass.

"Ultimately, the software which has been able to accumulate the greatest number of users is probably going to be the one that wins in the long run."

— Don Karmazin, vice president of IS, Chicago Board of Trade

"The news that the Common Desktop Environment, a shared "dashboard," or user interface for all Unix vendors' desktops, has been delayed from a planned release next month until next fall, according to industry sources.

"People are buying products, not architectures," said David Smith, director of IDC's advanced operating environment service and author of the IDC survey.

Another recent IDC survey of global information technology spending highlighted users' complaints that Unix vendors spend too much time bickering over standards and too little time solving everyday business problems. Only 29% of IS managers and 47% of LAN managers said they were actively pursuing a Unix-oriented strategy, even though they still buy Unix products as needed.

These figures are down 5% and 6%, respectively, from last year (see chart page 1).

But on the upside for Unix is its perceived maturity in the IS community, many users said.

"We are moving toward Unix," said Terry Dwyer, vice president of IS at Waverly, Inc., a Baltimore-based publishing company. "Unix requires a lot of up-front training, but we made the investment, and it's paying off for us."

A well-established market of hardware and software for Unix has been another plus, Dwyer added. "Let's face it, the third-party software for NT isn't there yet."

Not all sold

Still other users find much to be wary of with Unix in a business environment.

"We keep looking at Unix, but it occupies the exotic end of the spectrum, like an ethanol-powered computer," said James De Rocher, senior manager of systems and planning at Airlines Reporting Corp. in Arlington, Va. Yet he added, "We'll be doing an on-line transaction processing system here real soon, and we might have to put it on the Unix box because we don't want to put it on an IBM mainframe."

Feeding the growing interest in Windows NT and Novell, Inc.'s NetWare are ease of use and maintenance, plus the desire for shrink-wrapped software, users reported. Several

customers also noted that training costs would fall if server applications resembled familiar PC applications.

"The problem still is that there's no such thing as [a unified] Unix," said Gene Friedman, vice president of applied technology at The Chase Manhattan Bank NA in New York.

But Chase still sees its use of Unix growing as a server engine for relational databases even as it maintains extensive NetWare networks worldwide and uses OS/2 and Windows 3.1 clients.

Several users and analysts agreed that Unix is most heavily under fire on the desktop, where Microsoft reigns.

Yet the Unix industry — with the notable exceptions of the Santa Cruz Operation's Open Desktop, SunSoft's Solaris x86 and Novell's UnixWare — has responded sluggishly with shrink-wrapped products.



Terry Dwyer of Waverly, Inc.: Unix requires up-front training but is paying off

A different route

While NetWare shows no signs of losing its steely grip on the network operating system market, Novell has apparently accepted the fact that corporations may look elsewhere for an enterprise application server platform.

Novell is attempting to use its UnixWare operating system as a standard to provide application portability across the fragmented Unix industry. UnixWare is the Unix System V Release 4-based system acquired with Novell's purchase last year of Unix System Laboratories, Inc.

Yet so far the UnixWare strategy seems to have fizzled. A recent survey by *Computerworld's* Database Division found that 65% of 208 NetWare shops had no plans to implement UnixWare.

To hedge its bets, Novell said NetWare 4.x will interoperate with a variety of Unix systems, not just UnixWare. The vendor's Unix strategy aims to ensure that Unix continues to play a key role in corporate rightsizing strategies, while

pushing customers to choose Unix — rather than rival Microsoft's Windows NT operating system.

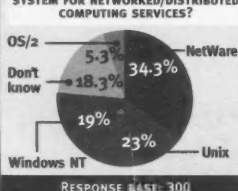
Key pieces of that strategy include plans to integrate Unix with NetWare 4.x-based enterprise services, and to provide management of Unix systems along with NetWare through NetWare Distributed Management Services.

— Elisabeth Horvitt

A strong serve

While many users are still deciding between Unix and Windows NT, NetWare remains a strong player in a distributed environment

WHICH IS THE BEST OPERATING SYSTEM FOR NETWORKED/DISTRIBUTED COMPUTING SERVICES?



RESPONSE BASE: 300

Source: International Data Corp., advanced operating environment survey

Standard procedure

While user interest in Unix appears to be declining, it remains unclear whether Microsoft can successfully position Windows NT as the new standard for server operating systems.

"It's a big advantage that Microsoft can say, 'This is how we're going to do it,' and that's the end of the story," said Bill Cornfield, president of The Windows Support Group, a consultancy in New York whose clients include the National Football League, Anheuser-Busch and American Express Co.'s Gold Card division.

"There's an inherent advantage in having both the client and server running in the same environment," added Colin Carpi, president of Chartwell Advisory Services,

Inc. in Penn Valley, Pa., which is building a financial services information system that eventually may serve more than 6 million users.

Even so, users may not be willing to accept a standard promulgated by a single vendor — albeit the biggest one, and one that controls the de facto desktop standard — vs. one backed by an international standards committee.

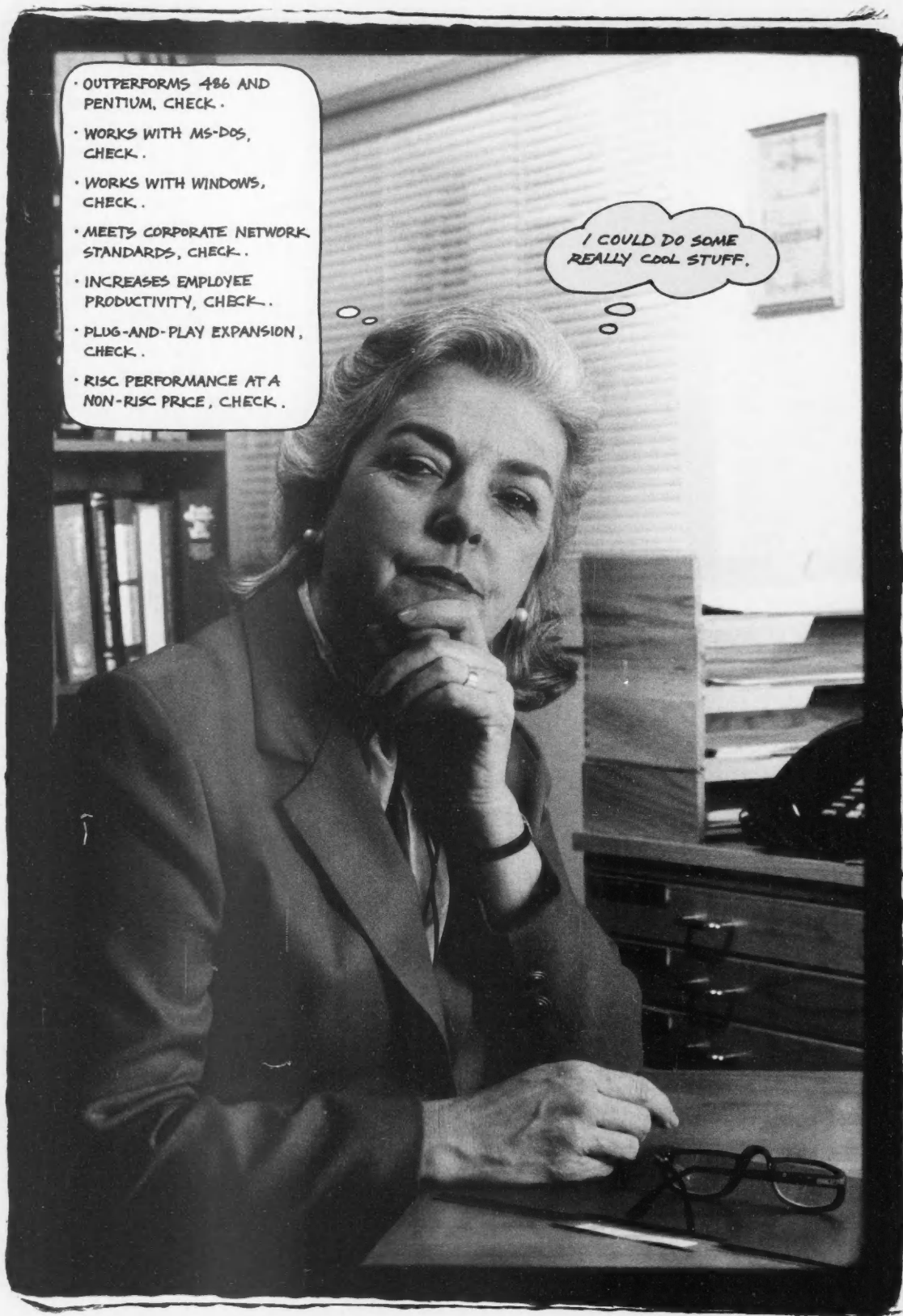
So far, the marketplace has not been quick to adopt NT. Since it shipped last August, NT sales have underwhelmed many analysts.

Observers noted that Microsoft will be dogged in its persistence to garner acceptance of its systems — and that could make NT a de facto standard. After all, it worked for Windows. — Stuart J. Johnston

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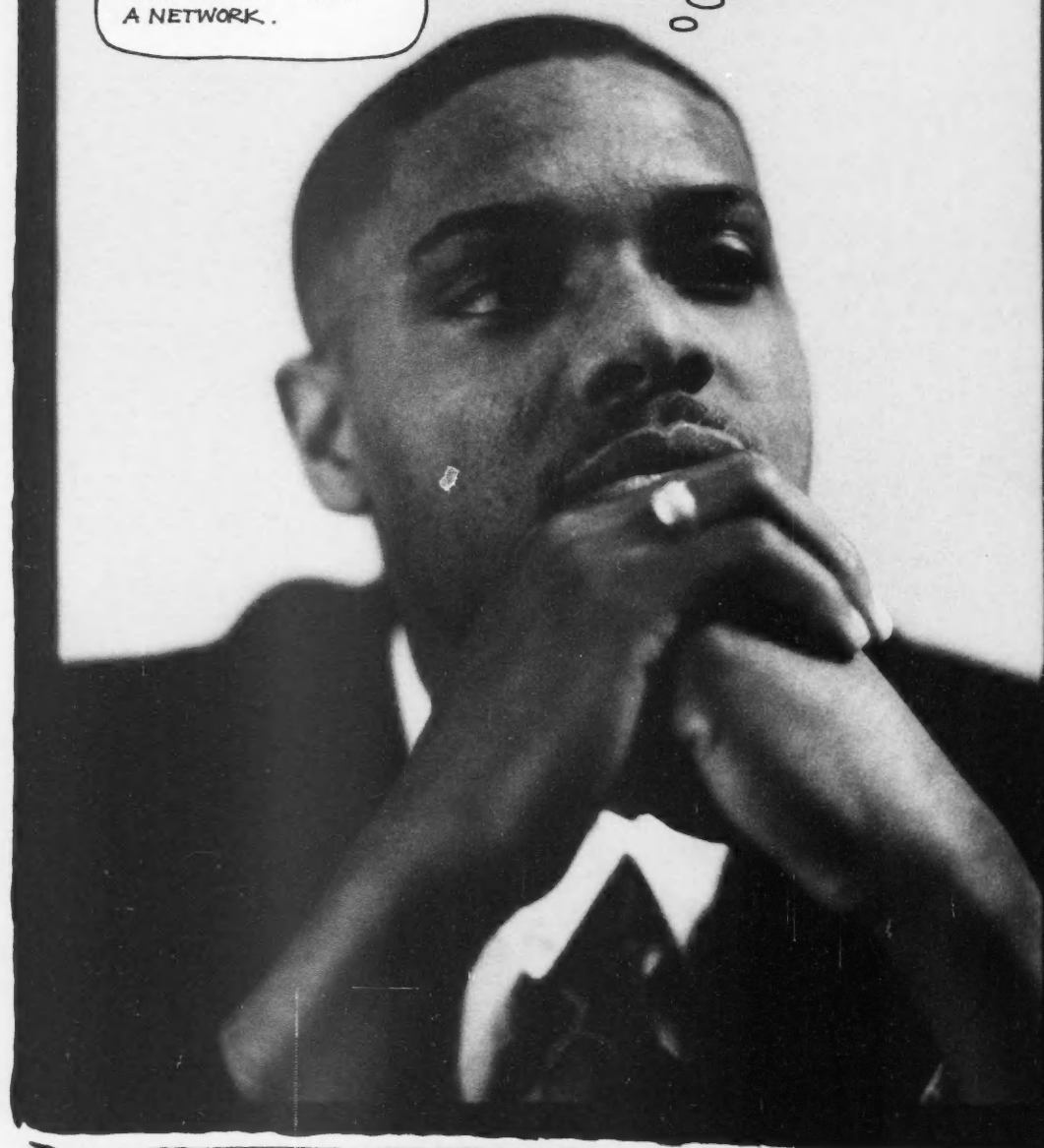
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Combine the power of RISC technology with the imagination of Apple engineers, and remarkable things begin to happen:

New, more natural ways of working, such as speech recognition, that transform computers from passive tools into intelligent assistants.

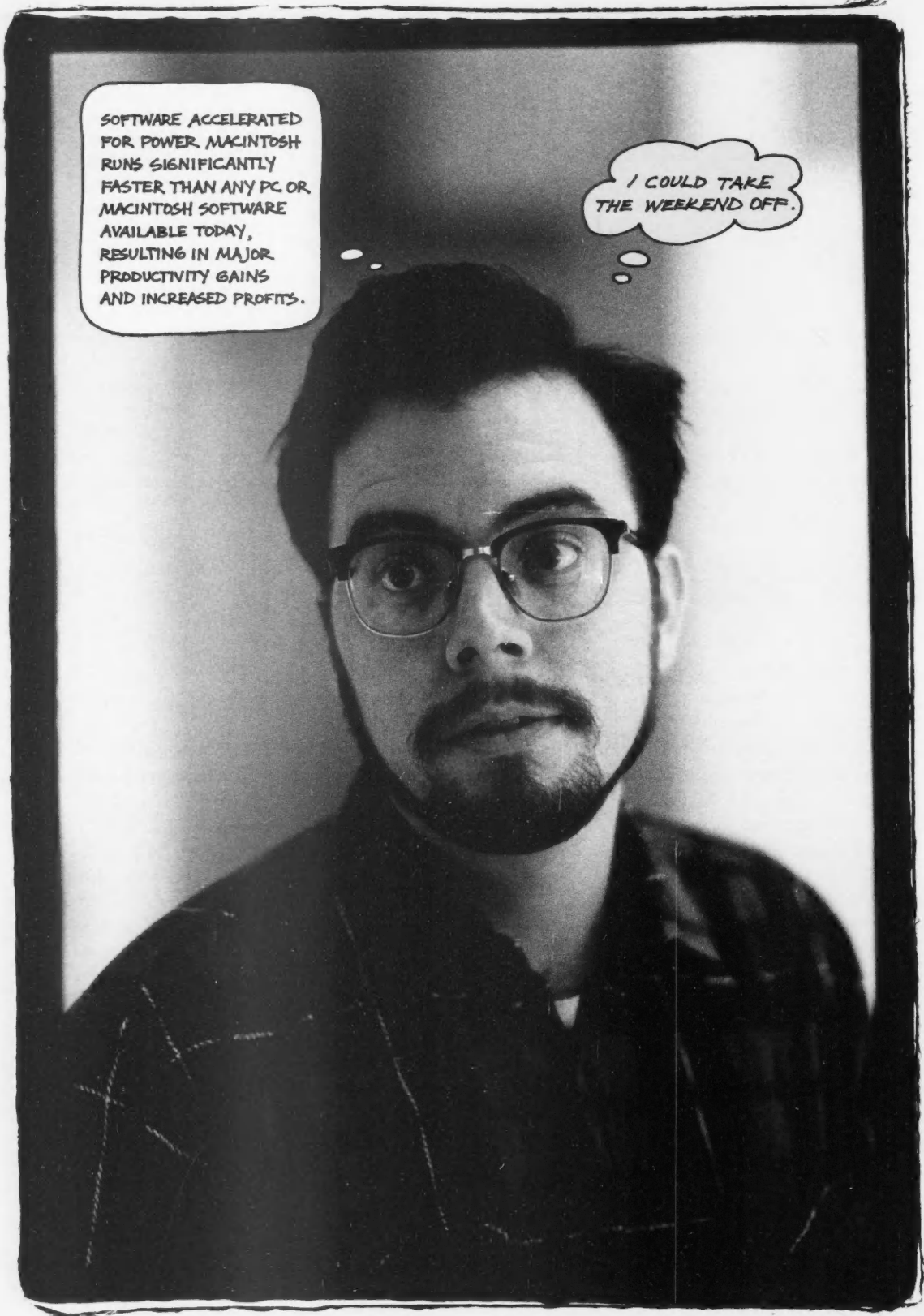
New help systems that will eventually enable a Power Macintosh to actually demonstrate *how* to do things—showing you instead of telling you.

And soon it will make possible a new open software standard called OpenDoc™, developed by Apple, IBM, WordPerfect, Novell, Sun and Taligent. It will run on virtually any type of personal computer and make it possible for Windows, DOS, UNIX®, OS/2 and Mac® users to collaborate easily on complex documents over the same network.

Introducing Power Macintosh.

SOFTWARE ACCELERATED
FOR POWER MACINTOSH
RUNS SIGNIFICANTLY
FASTER THAN ANY PC OR
MACINTOSH SOFTWARE
AVAILABLE TODAY,
RESULTING IN MAJOR
PRODUCTIVITY GAINS
AND INCREASED PROFITS.

I COULD TAKE
THE WEEKEND OFF.



Think of it as the present. Moving at warp speed.

So what exactly is RISC? What makes it better? And, most important, what can it do for you today?

A bit of history is in order.

In the early days of personal computing, the best way to make microprocessors run faster was to put as many programming instructions on them as possible. As software grew more complex and sophisticated, engineers added more transistors to each generation of microprocessor—so the chips got bigger and needed more power.



The most popular software will soon appear in new versions accelerated for Power Macintosh—versions that run much faster than the same software on PCs.

RISC is shorthand for Reduced Instruction Set Computing. That means the chip carries only those instructions that are most frequently used. When a complex instruction is needed, a RISC chip builds it (it takes just a nanosecond or two).

This streamlining makes RISC chips like the PowerPC 601 smaller, more efficient and far less expensive to manufacture than a non-RISC chip like Pentium. The result is that Power Macintosh computers are more powerful, yet cost less.

RISC power for engineering.

"Compared to a current Pentium machine," observed Mark Zimmer of Fractal Design Corporation in a recent issue of *PC Week*, "the PowerPC Mac is 2 times faster in integer performance and 3 to 4 times faster in floating-point operations." (With the Pentium machine running Windows 3.1,

the Power Macintosh running System 7.1 and both systems running Fractal Design Painter.)

This makes Power Macintosh significantly better for CAD/CAM, 3-D modeling, 3-D rendering and other processing-intensive tasks. Yet all this power comes with the practical simplicity of a Mac.

RISC power for publishing.

Macintosh personal computers have been the standard in the graphics and electronic publishing industries for more than a decade.

Now, with new Power Macintosh versions of the most popular industry-standard software, you can do all the things that a Macintosh does so well a lot faster: complex page layout, photo retouching and manipulation, designing and formatting book-length documents, prepress and color separation.

RISC power for multimedia.

Macintosh computers have long been popular with sound and video editors, multimedia publishers and musicians for the simple reason that they allow you to concentrate on what you're creating instead of on the computer you're creating with.

RISC technology delivers the power required for working with higher-quality images and creating more complex special effects. It also means doing everything faster, leaving more time for experimentation and exploration of creative solutions.

RISC power for business.

The power of RISC means more power for everything you do: searching a database, pulling together a presentation, updating a spreadsheet. It just happens faster on a Power Macintosh.

Which means that you spend more time actually doing things, and less time waiting for your computer to catch up with you. And that, come to think of it, is the very definition of "more productive."

Software accelerated for Power Macintosh.

This is just a fraction of the software that is now or soon will be available in versions accelerated for Power Macintosh.

BUSINESS	WordPerfect 3.0
PRODUCTIVITY	WordPerfect Office
ACI 4th Dimension	TECHNICAL SOLUTIONS
Adobe Illustrator	Abacus Concepts
Adobe Photoshop	StatView
Adobe Premiere	Abvent ZOOM
Agfa-Gevaert N.V.	auto-des-sys form-Z
Alias Sketch!	DeltaGraph Pro
Aldus PageMaker	Electric Image
Aldus Persuasion	Animation System
Aldus FreeHand	Emergent Behavior
Artwork Systems ArtPro	QuickApp
B & E Software RagTime	Graftek Ultimate
Canto Software Cumulus	Graphisoft ArchiCAD
Claris ClarisWorks	Graphisoft MiniCad
ClarisImpact	Imagine That! Extend
CTM Development	Imagine That!
VoiceAccess	Extend+BPR
Deneba Software Canvas	Imagine That!
Fractal Design Painter	Extend+Manufacturing
Fractal Design Painter X2	ITEDO IsoDraw
Fractal Design Sketcher	Knowledge Revolution
Frame FrameMaker	Working Model
Great Plains Dynamics	Macromedia MacroModel
C/S+	National Instruments HQ
Great Plains Dynamics	National Instruments
Release Two	LabVIEW
Gryphon Software Morph	Oracle Cooperative
Insignia Solutions	Development Environment
SoftWindows	Ray Dream Designer
Language Engineering	Specular International
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ORKIS ImageBase Pro	Central Point Software
QuarkXPress	MacTools
Radius	Dantz Development
PrecisionColor Pro	Retrospect
Radius RocketShare	Hi Resolution
Radius	MacSupervisor
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	Storm Technology JPEG
	image compression
	VICOM

Introducing Power Macintosh.

Think of it as everything that made Macintosh the most imitated computer in the world.



Think of it as the world's most productive personal computer.

Among all personal computers, Macintosh remains unique in its ability to get the job done.

A recent study by Arthur D. Little reconfirms what Apple has been saying for years: people who use Macintosh computers tend to do more and do it faster than people who use PCs.

In the study, Macintosh users completed a set of business computing tasks in 44% less time than a comparable group of PC users running Windows took to do the same tasks.

Add RISC performance to Macintosh, and the result is a level of human performance no other personal computer system can touch.

Think of it as the world's most versatile computer system.

Macintosh computers are more than easy to learn and use. They're also easy to grow.

Thanks to Apple's unique plug-and-play philosophy, adding a hard drive to a Macintosh is as easy as plugging it in. Adding a CD-ROM drive or printer takes just a few minutes. Creating a

network is as easy as plugging two Macintosh computers together with an inexpensive cable.

This makes the Macintosh system ideal for small businesses or departments that don't want to pay for the overhead of a large computer support staff. And for people who would rather concentrate on the work they're doing instead of the computer they're using to do it.

Think of it as an option you can exercise at any time.

If you're already a Macintosh user, you can upgrade your current Mac to a Power Macintosh today for as little as \$699.* It takes just a few minutes at your authorized Apple reseller.

And, of course, a Power Macintosh works with all other Macintosh computers over a network, sharing files and information easily. And a Power Macintosh can use the same monitors, expansion cards, cables, keyboards and peripherals as any Mac. (That plug-and-play philosophy again.)

This means that Power Macintosh is good news even for people who still don't need this much power. Because

Millions of Macintosh users can upgrade to Power Macintosh in minutes—for as little as \$699.*



you can buy any Macintosh today knowing you can take advantage of the power of Power Macintosh tomorrow—or whenever you need it.

Think of it as a reason to visit your authorized Apple reseller today.

Call 800-732-3131, ext. 600, for one near you. And get more of the most useful power a computer can give you. The power to be your best.*

Introducing Power Macintosh.

Apple 

*Apple Price of the Power Macintosh Upgrade Card effective 2/14/94. The following Macintosh computers can be upgraded to Power Macintosh: Macintosh Quadra 610, 650, 660a, 700, 800, 840a, 900 and 950; all Apple Workgroup Servers; all Macintosh Centris models; the Macintosh IIfx and IIfx; and Macintosh Performa 600. There are two ways to upgrade: the Power Macintosh Upgrade Card (Apple Price from \$699) or a complete logic board swap (Apple Price from \$999). Not every model offers both upgrade options. ©1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, Mac, Macintosh, Macintosh Quadra, Performa and "The power to be your best" are registered trademarks of Apple Computer, Inc.; AppleScript, Apple SuperDrive, GeoPort, Macintosh Centris, Macintosh PC Exchange, OpenDoc, Power Macintosh, QuickTime, QuickTime and TrueType are trademarks of Apple Computer, Inc.; PowerPC and the PowerPC logo are trademarks of International Business Machines Corporation, used under license herefrom. SoftWindows is a trademark of Insight Solutions Inc. UNIX is a registered trademark of UNIX System Laboratories, Inc.

Global briefs

Telecom probe

PARIS — Deutsche Bundespost Telekom is under investigation for allegedly channeling roughly 2 billion marks (\$1.17 billion) into its on-line data services arm and illegally hampering competition, company and government officials said last week. The investigation centers on whether the German telecommunications giant used revenue from its telephone services to fund its Datex-P arm, which offers X.25 on-line network services.

Siemens comeback

PARIS — Siemens AG is counting on chips and fiber optics to drive it back to profitability after losing 165 million marks (\$97 million) on chip production last year. The German information technology firm forecast last week that its chip production facilities will be profitable starting in 1995.

Thieves purloin chips

LONDON — Thieves have stolen memory chips worth \$3.5 million from a warehouse in Scotland in what is believed to be the biggest in a series of similar thefts in Europe. The chips were taken last week from Haven Products in Greenock.

Fujitsu, Magic team

TOKYO — Fujitsu Ltd. upped the ante in the race for a global personal intelligent communications standard with its announcement last week of an undisclosed investment in General Magic, Inc. The new partners will develop a wide range of products and services supporting the California company's licensed Telescript and Magic Cap technologies.

AT&T undersea

AT&T has reached agreement with other telecommunications providers in Southeast Asia to participate in the construction of an undersea fiber-optic cable system linking Vietnam, Thailand and Hong Kong. The 3,400-kilometer system will link cable-landing stations.

Customer service

Compaq Europe beefs up

Facing its 'biggest weakness,' Compaq Europe re-engineers to meet demand

By Michael Fitzgerald
NEW YORK

Compaq Computer Corp.'s top European executive said the PC maker is putting some new gears into its engine to catch up to runaway demand.

Andreas Barth, who took over Compaq Europe in 1991, said in a recent interview here that Compaq will address its availability issues and beef up corporate customer service. Barth succeeded Eckhard Pfeiffer, who is now Compaq's chief executive officer.

Very serious shortages

"Those are our main issues," said Maximo Neira, European PC technology manager at Baxter Healthcare in Valencia, Spain. "Compaq, like IBM, has serious, serious stock shortages... and our main concern was that after the purchase, we have a very different service level."

Neira added that he would also like Compaq Europe to devise a scheme for universal pricing and product supply

throughout Europe.

However, the top priority on Barth's "to do" list is meeting demand, which he called Compaq Europe's "biggest weakness."

Fueled by Compaq's worldwide price cuts and aggressive channel expansion, Compaq's European PC sales rose 70% last year. This came during a dismal European business climate that saw overall PC sales drop 2.2%. The No. 3 U.S. PC maker is No. 1 in sales in 13 European countries and among corporations. Compaq's European operations represent almost 40% of its overall business.

But business could have been better.

"We were victims of our success," Barth said, and he confessed that "we need major improvements in our logistics" both in dealing with suppliers and in meeting customer needs.

Accordingly, Compaq Europe will shift this year from a build-to-forecast strategy to a build-to-order strategy and is stockpiling parts and other materials to do so. It is

also re-engineering its logistics process, forecasting and order fulfillment as part of an information management makeover expected to be completed in the second half of this year.

Looking to compete

On the corporate information systems side, Compaq Europe will boost its customer support and service to compete effectively in the client/server market.

For information systems managers at U.S.-based multinationals using Compaq systems, this should mean better support for their client/server projects in Europe.

Specifically, Compaq Europe plans to add both field engineers and systems engineers, increase its outbound sales force — which supports resellers but does not sell directly — and boost its 120 major account managers in Europe by at least 25% in 1994. The vendor also plans to push into the European application server market in 1994.



International superhighway

Carriers want new rules for multimedia road

By Marc Ferranti
PARIS

■ Industry executives met at last week's Networked Economy Europe conference to address issues related to the international information superhighway, including the need for new rules to help finance and guide the way into cyberspace.

The executives, representing a mix of telecommunications and computer companies, pushed for fewer government restrictions and haggled over new formulas for paying for multimedia data transmission.

Questions of financing investments and gaining access to global markets must be cleared up before digital convergence — the merging of television, PCs, telephone and mobile communications — becomes a reality, the carriers noted.

The government role

"Governments are trying to separate [types of] networks because their main aim is not to provide services to the customer but to bring about competition, and... it's a very artificial debate," said Ben

Verwaayen, president of PTT Telecom in the Netherlands.

Industry leaders agreed that government can play a role, but mainly as a watchdog rather than a regulator of alliances.

"It is appropriate for government to look at how connections into the home are being charged," said Microsoft Chief Executive Officer Bill Gates. "But they should allow competition among companies, and if one [company takes] a really dominant role, the government can come in later and correct it."

Some of the regulators on the conference panels agreed that old distinctions among broadcasting, telephone, content and carrier providers are growing obsolete as companies such as Bell Atlantic Corp. and British Telecom test video-on-demand systems using Oracle Corp.'s media database servers.

They also noted that adapting to new market demands causes controversy among

users when rates are involved.

"Look at what happened here in France when France Telecom adjusted its rates, bringing down international rates and at the same time bringing up national rates slightly," said Bruno

Lassere, director general of Posts and Telecommunications in France. "There was a lot of complaining."

Rates will be a big issue because the very basis on which carriers charge content providers, such as software and production companies, is going to change, some carriers argued.

Several carrier representatives who were on panels at the conference — including AT&T Executive Vice President Alex Mandl and British Telecom Chairman Iain Vallance — said they had no intention of getting into the content business. But at the same time, the carriers do not want to be counted out of newfound revenue on the digital superhighway. Charging by the bit — whether that bit is for tele-

phone service or for interactive movie service — is an outdated idea, according to the carriers.

Pay what you weigh

Customers should be charged more for services they value more highly.

"We have to move from a cost-based method to a value-based method for rates.... The value of bringing gold out of the ground has to be more than the bringing of coal; you don't just charge for the cost of the operation," Vallance said.

Gates — whose company may end up paying for some of the higher rates if this change is wrought — said value-based rate charging has its problems.

"It's going to be hard to say what the value of data is. If you're talking about my company's internal data, for example, ... it might have to be some mixed scheme," Gates said.

However, attendees pointed out that users are already charged for value-based service on a de facto basis. For example, many businesses do batch data transmission at night to take advantage of lower rates.

Ferranti is IDG News Service's Paris bureau chief.



Computer Industry

Briefs

Settlement reached

Supercomputer maker **Kendall Square Research Corp.** in Cambridge, Mass., last week said it has settled shareholder litigation by agreeing to pay the plaintiffs \$5.35 million in cash, 3.5 million shares of common stock and warrants to buy 1.5 million additional shares at \$4.50 each. As a result, the firm's largest investor has agreed to increase his stake in the company to 25% from 4%. This means an infusion of \$25 million in cash for the financially troubled firm.

Bull courts NEC

France is publicly pressing its courtship of Japan's **NEC Corp.** as a possible savior for **Groupe Bull**, which the government last week declared will be privatized by year's end. Bull is currently owned by the following companies: NEC (4.3%), the French government (75.9%), France Telecom (17%) and IBM (2.1%). IBM has publicly said it is not interested in attaining a larger share of the loss-making Bull.

Nasdaq, Cadre team

The **Nasdaq Stock Market, Inc.** has contracted with **Cadre Technologies, Inc.** to develop the next generation of the Nasdaq market. Under the agreement, Nasdaq will purchase \$500,000 worth of software development products and services from Cadre. The deal is part of a multi-million-dollar technology enhancement under way by Nasdaq.

SHORT TAKES Genicom

Corp., a supplier of printer technologies, said it was unable to come to terms with a prospective buyer of its Relay business unit. . . . **Computer Network Technologies, Inc.** has completed its acquisition of **Brixton Systems, Inc.** . . . **Transaction Network Services, Inc.** filed for an initial public offering of \$1.8 million shares of common stock, with expected pricing between \$10 and \$12.

Client/server path clear for AMS

By Mitch Betts
FAIRFAX, VA.

Coming off an unusually rocky 1993, American Management Systems, Inc. (AMS) looks well on its way to making the often-traumatic switch from the mainframe world to client/server systems integration.

Fairfax, Va.-based AMS has already revamped its core software modules, previously geared to run on IBM mainframes, to support object-oriented programming and client/server platforms [CW, Oct. 18, 1993]. Also key, the consultancy has managed to retain its solid reputation with loyal customers — even when implementing tricky client/server systems.

new products are co-developed with users, and AMS vertical market experts are good at suggesting additional system upgrades.

You get the moon

"Many vendors promise you the moon and can't deliver," said Charles Piazza, vice president of international operations at Barnett Banks, Inc. in Jacksonville, Fla. "AMS errs on the conservative side and doesn't promise as much as they can really deliver." AMS

developed an IBM OS/2-based client/server system for Piazza's department last year [CW, Aug. 23, 1993].

The result is that AMS' client/server revenue has grown steadily from \$15 million in 1991 to a projected \$140 million this year, or 35% of total projected revenue (see chart).

"Many large organizations are nervous about moving their mission-critical systems to client/server," said AMS' new chief executive officer, Paul A. Brands. "They want to move some smaller projects first, while providing a migration path for moving mission-critical systems" later.

That is precisely the case at Columbia University in New York. AMS and the university are co-developing client/server software for a facilities management system and mainframe-based software for financial and student systems, said Mike Marinaccio, deputy vice president for administrative information systems.

"I chose AMS for the student system because they had a migration path to client/server when it is mature," said Mark



CEO Paul A. Brands says he has no plans for dramatic changes at AMS

Olson, deputy vice president for student administrative services.

Eventually, Columbia plans to migrate all of its systems to AMS client/server software, Marinaccio said, illustrating the loyalty of AMS customers. Roughly 85% of AMS' revenue comes from repeat business.

Marketing may be the firm's biggest weakness. "They have solid products but don't communicate that effectively," said one user, who requested anonymity.

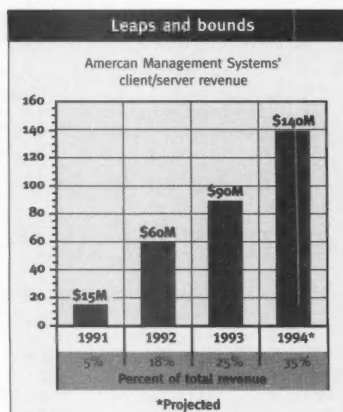
The company continues to focus on three types of business: management consulting (such as business re-engineering); reusable and customized software; and systems integration. Total revenue in 1993 was \$364 million.

A few setbacks

Last year was uncharacteristically tough for AMS. A major blow was the evaporation of software development business with IBM after IBM drastically cut spending on software alliances.

AMS also had a minor contract dispute with the U.S. Environmental Protection Agency and made high-cost investments to revamp its technology lines, build its business in Europe and recruit more than 400 college graduates.

Brands, who took over from company founders last September, said he has no plans for dramatic changes at AMS, just the goal of steadily climbing to \$1 billion in revenue by the year 2000. Acquisitions will be limited to niche players, he said, such as the recent purchase of Vista Concepts, Inc., a small software vendor focused on securities processing.



Source: American Management Systems, Inc., Fairfax, Va.

William D. Rabin, an analyst at J. P. Morgan Securities, Inc. in New York, attributed such loyalty to AMS' ability to finish its systems on time and on budget. He noted that

ASK scurries to soothe bankers

By Kim S. Nash

■ Under pressure from its two largest creditors, The **ASK Group, Inc.** was scrambling last week to fix its cash management practices in order to get cash reserves and accounts receivable to acceptable levels, said Eric Carlson, ASK's chief executive officer.

As of ASK's fiscal second quarter 1994, the firm was in violation of loan covenants mandated by First National Bank of Boston and Canadian Imperial Bank of Commerce. A "standstill agreement" gives ASK 60 days to make changes.

ASK so far has implemented performance-based pay for Carlson and Gary Filler, new chief financial officer. The company has also capped discretionary spending, such as travel and supplies, and tightened daily cash management.

Losing sight of the ABC's

"In our zeal to become a billion-dollar software company, we forgot business basics," said Carlson, who was appointed CEO a month ago.

ASK has not made it to \$1 billion yet, posting sales of \$426 million for fiscal 1993. Losses for the 1994 fiscal year so far top \$20 million on sales of

\$184,000. The banks declined to comment on ASK's finances.

ASK has more than just financial worries. A cadre of senior executives have left since Pier Carlo Falotti resigned as CEO last month. Many of them indicated unhappiness with recent management decisions.

Among the departing executives were 10-year-veteran Les Wright, former CFO and acting CEO; Beverly Brown, vice president of marketing for bread-and-butter database and con-

nectivity products; and Michael Laven, president of worldwide distribution.

Research and development, too, has "had some resignations," said chief technology officer Marilyn Bohl. "But as far as our ability to deliver on the commitments we have made and to drive forward, I do not see an impact."

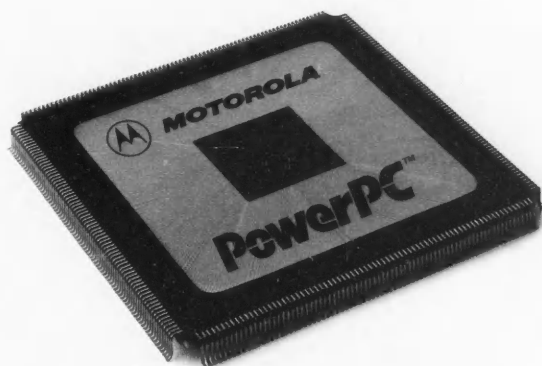
ASK has no plans to stop or slow R&D work in any of its database, application, tools and networking product lines, she added.

ASK founder Sandra Kurtzig's upcoming book. See page 115.

Wanna merge?

New York investment house Unterberg Harris is handling takeover and merger inquiries for ASK.

Way to go, Apple.



Apple's new Power Macintosh™ computers are here. Based on the new PowerPC™ microprocessor, they truly have the power to change the course of computing. So congratulations, Apple. Way to go, go, go.

PowerPC Microprocessors. *A change for the better.*



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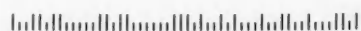
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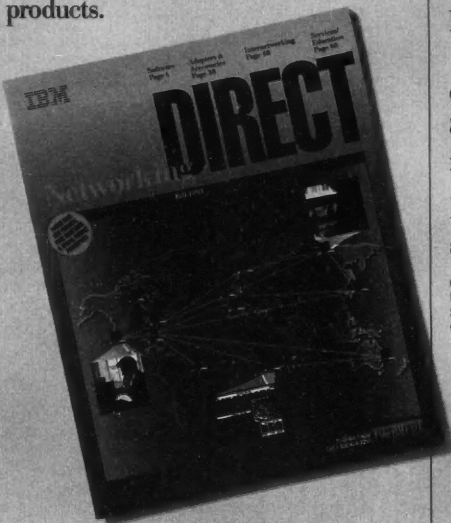
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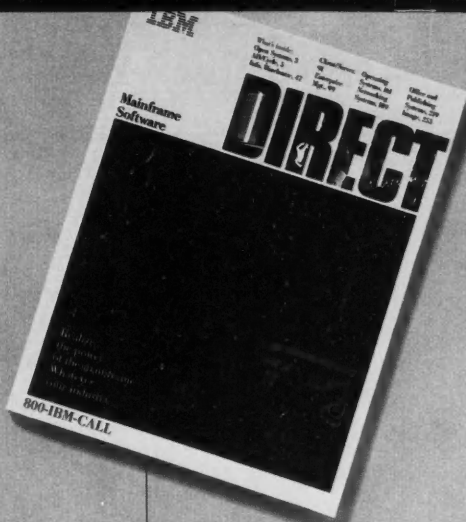
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Serious business

"War is much too serious to leave to the generals."

—Georges Clemenceau

Perhaps the poke that one magazine took at the CIO position a couple of years ago, saying the initials stood for "career is over," was premature. You could, however, make a case for the CIE position, as in "career is ending."

That might certainly be one interpretation of the data emerging on the state of affairs for top information honchos. As we reported last week:

- A first-time *Computerworld* survey of 236 large companies revealed that nearly half the top technology posts are held by individuals with primarily business backgrounds.
- A Deloitte & Touche survey showed that CIO turnover has increased for the sixth straight year.
- Over the past year, top technology positions were filled with people with business backgrounds twice as often as they were filled with people with technology backgrounds. Think for a minute: Is there any other profession where this is the case?
- A mere 5% of the 350 firms polled by the Institute of Management Accountants had their IS groups reporting to a CIO.

This is terrible news, but only for those who aspire to parlay technical careers into a seat in the walnut-paneled front offices. For the vast bulk of IS management professionals, these trends are the clearest indication that the IS function has moved out of the backwater glass houses and cost centers and into the mainstream of contemporary business strategies. That's good news.

Maybe in hindsight we can see the unrealistic nature of expectations that people born and bred to be technologists can and should ascend to the ranks of corporate strategist. Should we expect surgeons to somehow evolve into hospital administrators capable of dealing with today's competitive medical environment? Aren't the skills and basic requirements of a technologist vastly different from those of a business strategist-cum-schmooser/business politician?

In the future, people will look back on the last decade as a period when technology came out of the corporate closet and integrated with the world. A new brand of technology champion is emerging from the business schools, armed with MBA training that distinguishes very little between information technology and the general operations of the firm. This is a very different person from the nontechnologist who heads IS in many organizations today—a dangerous precedent, in my opinion.

And for the mainstream IS technologists of today? Maybe the advice given a year ago in these pages from former consultant and CIO Paul Strassmann is most appropriate: "... get back to basics and clean up non-interoperable, redundant, obsolete, over-priced, error-prone, schedule-lagging and credibility-lacking systems."

Bill Laberis

Bill Laberis, Editor in chief



Isis not incapable

I wish to clarify a statement attributed to me in the story "Stratus plans to integrate Isis with OSF's DCE" [CW, Feb. 14]. It left the false impression that the Isis product set is not appropriate for applications requiring continuous uptime.

When asked if we would use Isis for mission-critical applications, I responded that we would not, primarily because we do not consider our application to be mission-critical.

This quote has left readers with the misleading impression that Isis is incapable of supporting such applications. It is my understanding that other organizations are using Isis to distribute mission-critical systems. By contrast, our use of the Isis Distributed Toolkit is more to perform the load-balancing, parallel execution and less stringent fault tolerance built into our application.

T. Anthony Allen
Washington

Microsoft's future is already here

There have been quite a few articles in *Computerworld* discussing issues such as object-oriented software, object managers, Windows-based E-mail, APIs, client/server models, distributed computing, multitasking operating systems and the like. Most are centered around the technology promised by Microsoft. I would like to point out that these products are available now in production quantity and quality and with

no wait to receive them. You can buy these from a host of other direct suppliers. I get weary of reading about products promised when I am already using them under a different name.

Ed Van Vliet
State College, Pa.

Restrictions pose threat to Internet

Well, I've been expecting it for some time: a *Computerworld* article about the "abuses" of the Internet.

The attitudes displayed in your front-page article and editorial [CW, Feb. 14] are a sad example of the business "dweebification" that expanded corporate use of the Internet is promoting. There are now those advocating that the Internet be sacrificed on the altar of "business need."

The time-honored practice of allowing systems administrators to control Internet access without having the "suits" looking over their shoulders has worked quite well until now.

At one time it was considered a privilege to access Usenet. Certain responsibilities were incurred, such as being willing to carry as many groups as you could afford, even if you weren't interested in them yourself. In return, you did all you could to help expand the 'net and its influence. Now the attitude seems to be, "How can I get the maximum profit out of the 'net while doing as little as possible for it in return?"

It will be a shame if companies with liberal policies begin restricting the news groups they carry. The result will be fragmentation of

the 'net and a degradation of service for everybody. But at least the bean counters will have all their decimal points in the right place.

Wayne Brown
Columbus, Miss.

Passion play

Regarding the editorial "Highway patrol" [CW, Feb. 14]: Whenever anyone talks about work and Internet access, the subject of sex always comes up. Then, very quickly, the subject turns to what should be prevented from access.

My business theory (described in my new book), developed over many years, is that when people are free to be themselves, to enjoy their work and to express their creativity, the company benefits. Simply and clearly, happy people make money!

Mr. Manager, shaking his head, thinks, "Horror of horrors! Do you mean that if I cut off their access to alt.sex I may cut off their fun, their creativity and their passion for work?"

Yes, Mr. Manager, that's exactly what I mean!

Barbara Taylor
Silverado, Calif.

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Strategic alliance illusions

Ted Krum

It was a day for *deja vu* last year when leading vendors announced COSE, yet another alliance to standardize Unix. Industry analysts groaned. The outside business press cheered. Uncommitted vendors flapped like beheaded chickens, and committed vendors reaffirmed their full commitments to the incompatible initiatives they had joined the year before.

Now we hear that the Open Software Foundation will present plans to resuscitate itself at UniForum this week. Do people never learn? Considering the long-term relationships that customers and developers have with their software, vendors' inability to keep long-term commitments undermines the loyalty of these key constituencies. Faced with so many disappointments, executives need to think seriously about why so many industry alliances produce so little.

One reason is simply the pace of change. Compared with the businesses most of us work in, the computer industry is a fragmented, chaotic

marketplace with low barriers to entry, rapid innovation and zero government regulation. These factors make long-term relationships impractical or even unwise. Most of what systems vendors call "strategic alliances" would be called outsourcing decisions, brand licensing or distribution agreements in other industries and are easily amended as conditions change.

ACE, for example, was a hodgepodge of such agreements that flew apart because the rest of the industry moved too quickly while key components were delayed. Few of the dozens of participants really got hurt, although great opportunities were lost.

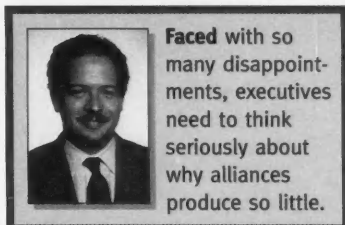
In contrast, real strategic alliances allow companies to use their complementary strengths to address common challenges to their long-term survival. Sun, for example, needed AT&T's deep pockets and credibility as the source of Unix to break into the corporate market. AT&T needed a going concern in the industry to unlock the business potential of its technology.

Too often, vendors mistake the role of corporate competitive strategy in driving real alliances and in differentiating them from marriages of convenience. The OSF exemplifies the latter. Led by IBM, the OSF's plan was to standardize Unix for commercial users. Arguably, however, its real mission was to break Sun's momentum after it allied with AT&T. Once this threat had eased in late 1991, IBM and HP backed away from OSF/1.

As a consultant visiting Digital at the time, I was stunned when senior Digital managers asked why their competitors would invest so much in their alliance only to throw away its fruits. Good scientists that they were, the managers were agnostic when I suggested that IBM and HP had no intention of giving up AIX and HP/UX as product differentiators. In fact, they would be happy to leave Digital holding the bag as the only major vendor supporting the new operating system.

Today, Digital faces the burden of supporting four different operating systems on three different hardware architectures, a quagmire well worth the investment to their competitors.

Krum is a senior research analyst at RCB International in Stamford, Conn. He has worked as a developer and consultant for 11 years. He can be reached by E-mail at Tedkrum@aol.com.



Faced with so many disappointments, executives need to think seriously about why alliances produce so little.

A different way to win the PC race

Max D. Hopper

There's an old saying among those who custom-build high-performance engines for hot rods: "Speed costs money. How fast do you want to go?"

In the PC domain, the constant outpouring of ever more capable products causes IS managers to ponder much the same challenge from technology vendors. Robust new versions of popular business software, such as WordPerfect 6.0, Quattro Pro 5.0 and others, are packed with impressive features and capabilities. But, to run optimally, many programs make voracious demands on system resources.

While this poses no problem for power users with fast, new RAM-crammed PCs, the vendors of these hot rod applications are leaving many customers in the dust.

Software developers, who aggressively tailgate the hurtling pace of hardware innovation, should be more mindful of the practical speed limit imposed upon the desktops of an enterprise. Today, corporate users are typically constrained by an embedded base, which surges forward en masse, then stops for three to five years, waiting for the company's next platform replacement cycle.

IS managers whose systems are in midcycle are frustrated by PCs too puny to support the latest release of an application. Their users, who have seen the new version advertised and may even be using it on their PCs at home, wonder why they have to make do with an obsolete

version at the office. Yet, the near-term reality is that PC platform replacement is not feasible, economically or practically.

In networks of hundreds or thousands of PCs, there is simply too much hardware at issue, too great an impact on the infrastructure and too many hidden costs. A recent study by the Gartner Group consultancy suggests that capital costs for hardware and software account for only 15% of the five-year total cost of ownership for a typical networked PC infrastructure.

What, then, are the alternatives to this market impasse? Vendors might consider this midcycle segment of the market in their product planning. Pursuing production leadership is fine for their customers with state-of-the-art hardware, but vendors also need to service those customers who cannot exploit all the functionality of leading-edge offerings.

This is not a niche market but a mainstream one. For some popular applications, the number of users whose systems lag the state of the art totals in the millions. Perhaps vendors could offer these customers an incremental

upgrade, or "lite" version, that accommodates their hardware constraints with usable enhancements that merit and sustain brand loyalty—a bridge product with some of the power but little of the appetite. It's doubtful that the "ultralite" versions found in bundled suites of applications fulfill this bridge function, or that their "one-size-fits-all" approach squares with users' real world preferences.

On the customer side of this market dilemma, midcycle users can encourage more responsive software products by better defining their needs and limitations to their vendors. Should vendors ignore this market segment, it should not surprise them if their customers seek a competitive solution when PCs must be replaced.

We'd all like to race along with leading-edge systems and applications that make them sing, but the reality is that most of us cannot. This creates a void in software solutions and a significant market opportunity for those vendors that will recognize and respond to it.

Hopper is chairman of AMR Corp.'s The Sabre Group.

Developers must face the reality of three-to-five-year hardware life cycles and offer users alternatives to fat application upgrades.



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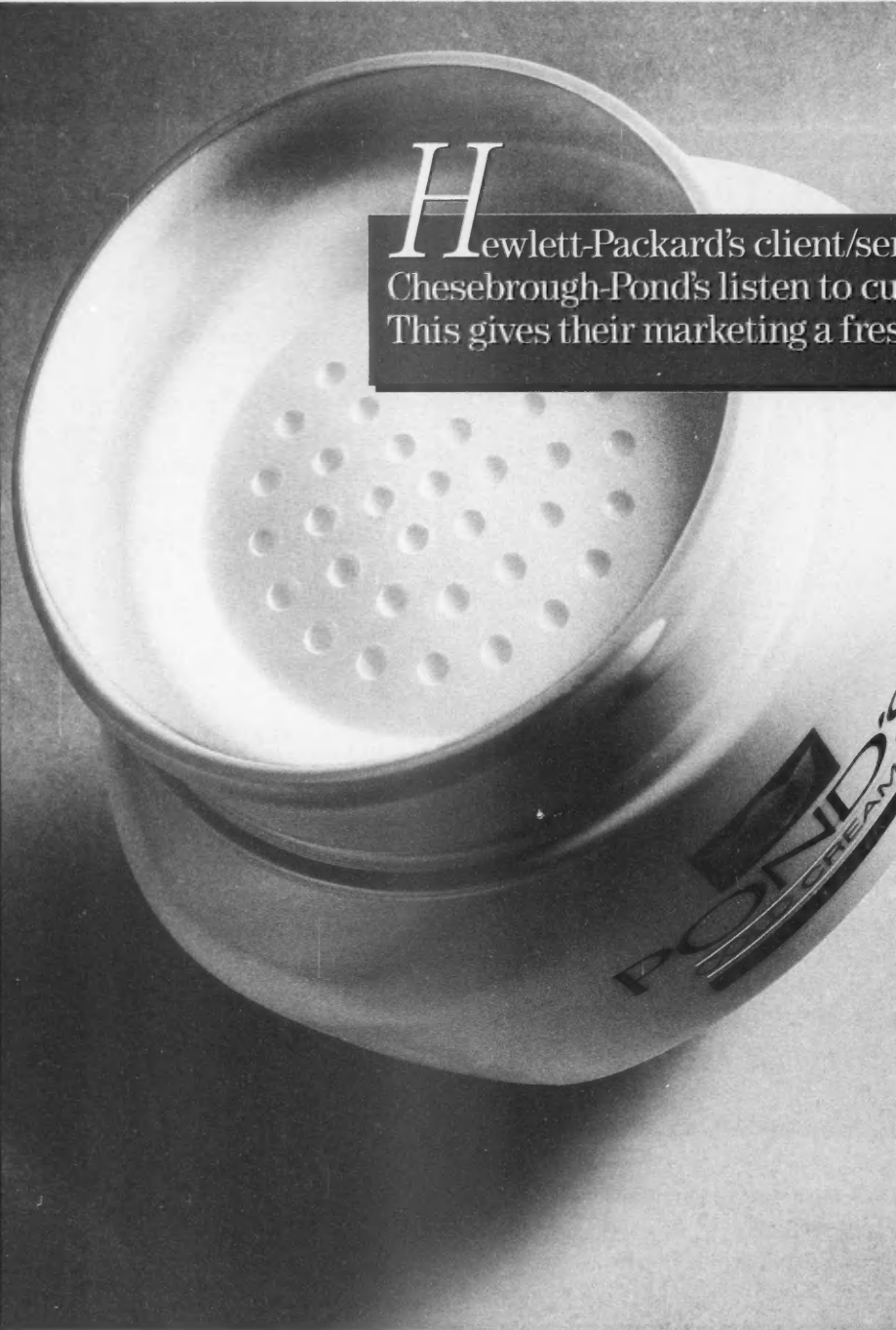
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Desktop Computing

POLARIS SLIMS DOWN
PACKRAT, 49
NEW PRODUCTS, 57

Graphics board makers hit warp speed

By Michael Fitzgerald

Users' incessant demand for Windows to run faster, like some adrenaline-producing drumbeat, continues to spur graphics board makers to new performance levels.

For example, market leaders such as ATI Technologies, Inc. in Thornhill, Ontario, have recently pushed new graphics products out the door, aiming to handle the system-slowness of Windows.

"Something very important happened in the last year with the Windows accelerator market—it became standard," said Martin Reynolds, an analyst at Computer Intelligence/InfoCorp in Santa Clara, Calif. He said this means performance differentials among boards has become negligible, which has spurred hardware makers to integrate accelerator chips into systems.

Users say they like this trend.

"We don't go out of our way to buy graphics boards because everything has an accelerator built-in, and video is not the hang-up for us," said William I. Lodge, project leader at The Turner Corp., a multinational construction company in New York.

Several major trends will occur in the graphics accelerator market this year—one of which will be that the market will not make a rapid shift to the speedy chips. Instead, unaccelerated Super VGA boards will continue to sell well, thanks to the tendency of international users not to use Windows.

One of the major trends in the U.S. market will be Plug and Play, an initiative driven by Microsoft Corp. and other vendors.

"Plug and Play is a big trend, and Microsoft is pushing it very intensely," said Fred Dunn, an analyst at Jon Peddie Associates.

Gradual acceptance

New systems will start to be Plug and Play-compatible by early 1995 at best, said Henry Quan, vice president of marketing at ATI Technologies, Inc. "It's like converting the U.S. to the metric system—it won't happen overnight."

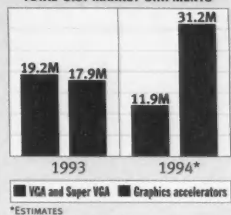
ATI, the biggest player in the market, recently announced the Mach64 chip, a 64M-bit accelerator that can run applications in 24-bit color. While 24-bit color usually means slower system performance because the system has to process an exponentially greater number of colors, Quan said ATI's new chip runs faster in 24-bit color than in 16-bit color, depending on the resolution. ATI also introduced a board built on the chip, the Graphics Turbo Pro, which will sell for \$599.

The other major trend in the market will be the move

Pedal to the metal

Graphics accelerators are popular but not as popular as regular graphics, in part because much of the world does not use Windows. But that is changing.

TOTAL U.S. MARKET SHIPMENTS



Source: Jon Peddie Associates, Tiburon, Calif.

to Peripheral Component Interconnect (PCI). Analysts and vendors agreed that PCI will grab the lion's share of graphics add-in boards by year's end, effectively ending the question of whether PCI or the Video Electronics Standards Association's VL local bus architecture will be the dominant architecture.

Eventually, VL may draw little support. For the near term, however, vendors will support both architectures.

Number Nine Computer Corp., a large board maker in Lexington, Mass., released VL and PCI versions of its latest board, which is built around the chip of a major ATI competitor, S3, Inc. Number Nine's XE64 board uses the S3 Vision 864 chip and

will cost \$249.

Number Nine has also built in a software driver called Hawkeye, which features some sophisticated system management utilities. One is Deja View, which will store the files upon shutdown and automatically open whatever documents the user specifies.

A trend that vendors will push, and users will probably pay little attention to, will be a move toward full-motion video decompression.

Processors

Pentium release surprises vendors

By Jaikumar Vijayan

Intel Corp.'s earlier-than-anticipated release of its P54C Pentium processors this month caught OEMs at different points on the production curve.

While several hardware vendors were quick off the block to announce systems built around the new 90-MHz and 100-MHz processors, which were originally planned for May delivery, others were caught short of the finish line by the accelerated announcement.

Users win the race

The release, almost two months ahead of schedule, is good news for users, who will be treated to lower systems prices sooner. However, users who have standardized on one or two vendors for their information systems requirements may find their suppliers among the ones late to market.

"We were more prepared for a later launch date," acknowledged Dave Kirkey, vice president of marketing at Advanced Logic Research, Inc. (ALR) in Irvine, Calif. Though the company was among the first to announce products based on the P54C, it had to scramble to get there.

Still, ALR has quoted delivery timetables of four to six weeks. The company's new Pentium

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Apple does inventory spring-cleaning

By Mark Halper

Apple Computer, Inc.'s recent price cuts on its PowerBook line of notebook computers marked an effort by the company to clear inventory before rolling out its next-generation model, users said.

The new line, code-named Blackbird, is expected in mid-May and will mark the first major redesign of the PowerBook since its introduction more than two years ago.

Blackbird is expected to house a 68040 microprocessor and be priced at around the same levels recently vacated by the 68030 PowerBooks and PowerBook Duos, which ranged from \$2,499 to \$3,619 before the 9% to 14% reductions [CW, March 7].

Sources privy to Apple's plans said the new machine includes PCMCIA support, a built-in touch pad that replaces the PowerBook's trackball for cursor control, two battery bays that in effect double the machine's battery life and a screen that is slightly larger than existing PowerBook screens. The machine has also been restyled, sources said.

Apple declined to comment about Blackbird. Despite the recent price cuts on existing models, at least one information systems director said he is advising users at his company to wait for the new offerings.

"I had a couple of people ask me today whether they should buy the new ones or wait, and I'm advising people to wait," said Michael Keithley, IS director at Creative Artists Agency, a Beverly Hills, Calif., talent agency that uses

Power pricing

Pricing for Apple's PowerBooks with Express Modem dropped roughly 10%

POWERBOOK MODEL	OLD PRICE	NEW PRICE
180 4/120	\$2,749	\$2,479
Duo 250 12/200	\$2,789	\$2,479
Duo 270C 12/240	\$3,619	\$3,299

On the way

Apple plans to add PowerPC-based notebooks by next year, after the Model 603, a low-power version of the PowerPC chip, becomes available.

Apple had planned for Blackbird to take flight in late April but has pushed back the launch a few weeks, sources said. One source said the new PowerBooks will be called the 520, 540 and 560.

about 150 PowerBooks.

He said larger price cuts—on the order of 30%—would have prompted him to advise his staff to buy clearance models.

Brian Connors, manager of the information center at DHL

Airways, Inc. in Redwood City, Calif., was a little more upbeat about the price cuts.

"Anytime the price goes down, people get happier," he said. "We think Apple's PowerBooks provide good value today."


Connors noted that Apple "is trying to move inventory out" as it gets ready to refresh its 2-year-old-plus offering, which he described as getting "a little long in the tooth."

Apple's only significant change to the line came last year when it added the Duo models, which were shipped without a floppy drive but with docking hardware for desktop use.

Meanwhile, among the purported new features, PCMCIA support in particular seemed to catch users' attention.

Keithley, for instance, said he would use PCMCIA technology for faster networking. Remote users at the agency currently use a relatively slow AppleTalk dial-in process, and on-site users use a bulky SCSI port for Ethernet connections, he noted.

"On the road, it would be really nice if we had other options, like [Integrated Services Digital Network] or Switch 56 connections," he said.



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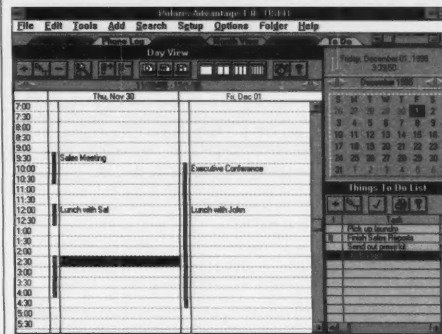
Polaris slims PackRat

Polaris Advantage to provide more functionality

■ The maker of PackRat, the do-everything personal organizer software, is downscaling the product.

San Diego-based Polaris Software has introduced a simplified, prettied-up ver-

sion of its PackRat product targeted at the mass market. According to Paul Gange, product marketing manager at Polaris, Polaris Advantage attempts to fix the major shortcoming of most personal information managers: ease of use. It is scheduled to ship during the first half of the year.



Polaris Advantage uses a file-folder design with one-button access to customization options for each object

sion of its PackRat product targeted at the mass market. According to Paul Gange, product marketing manager at Polaris, Polaris Advantage attempts to fix the major shortcoming of most personal information managers: ease of use. It is scheduled to ship during the first half of the year.

Polaris Advantage uses a file-folder design with one-button access to customization options for each object. It features the usual calendaring and address

book functions but adds a customizable interface that lets users mix and match organizer modules on the screen as well as launch Windows applications from within the program. A document management module also complements the

New features

The scheduler allows users to specify views of between one and seven days or an entire month at a time. It features drag-and-drop rescheduling, daily task lists and a meeting time finder. The contact management module features a

phone book with conversation log and call-tracking features, including a mini free-form database. Users can create mail merge letters using information stored in the phone book.

Polaris Advantage will be priced at \$149, but street prices are expected to be about \$79, Gange said. The product will include a utility that allows users of Lotus Development Corp.'s Organizer to import their data automatically into Polaris Advantage.

Pentium surprise

CONTINUED FROM PAGE 47

products are expected to have sticker prices starting at about \$4,195 for 90-MHz and \$4,695 for 100-MHz models.

Chips away

In the first week after the chip's introduction, 11 major manufacturers announced shipments or intentions to ship systems or servers based on the 60/90-MHz and 66/100-MHz Pentium chips. They include ALR, Acer America, Inc., Hewlett-Packard Co., Digital Equipment Corp. and NEC Corp.

The 100-MHz chip, however, will not reach full volume production until the fourth quarter.

AST Research, Inc. was quick to announce its support by demonstrating a Pentium-based desktop system soon after the release of the P54C.

However, specific models, pricing and availability have not yet been announced, though the company hopes to start full production by June, according

to Gerry Baker, AST's public relations manager.

Dell Computer Corp., whose P54C product launch coincided with Intel's release of the high-speed chip, had to rapidly move up its plans to match Intel's announcement, said Jill Shanks, public relations specialist at Dell.

But unlike ALR's products, Dell's 90-MHz Pentium-based servers are available now at prices starting at \$8,347.

Original time frame

Several vendors are working toward a May deadline and expect to announce Pentium products soon.

Compaq, which announced products based on Intel's DX4—its other new high-speed chip—will support the P54C on future desktops and servers but will not commit to a ship date, according to spokeswoman Donna Ruane.

Zenith Data Systems, which said its production plans have not been altered by Intel's early announcement, hopes to have its new Pentium systems out within a month.

The early release of the P54C Pentium processor, almost two months ahead of schedule, is good news for users, who will be treated to lower systems prices faster.

Feds choose Adobe for CDs

By Gary H. Anthes
WASHINGTON

The U.S. Department of Commerce performed a valuable public service when it began replacing hundreds of pounds of paper with 1-ounce CDs, but it didn't stop there. Now the CD-ROMs include the Acrobat Reader software from Adobe Systems, Inc.

National Economic, Social and Environmental Data Bank (partial contents):

- The Economic Report of the President
- Report of the National Performance Review
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- Digest of Educational Statistics
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- Decennial Census Summary

The CD-ROM may be ordered by calling (800) 782-8872.

Source: U.S. Department of Commerce; Economics and Statistics Administration

The Economics and Statistics Administration's National Economic, Social and Environmental Data Bank, published quarterly on CD-ROM, contains 80 documents from 20 federal agencies (see box). Now, for the first time, it also includes the federal budget.

The budget and all Internal Revenue Service tax forms are stored in Adobe's Portable Document Format (PDF), the key to the company's "cross-platform viewing" technology.

PDF files can describe documents containing text, graphics and images in a device- and resolution-independent format and in rich combinations of fonts and colors.

Acrobat Reader lets users view, navigate and print fully formatted digital documents from Macintosh, MS-DOS, Windows or Unix platforms. It will allow display of budget pages and tax forms exactly as they exist on paper, and it includes software for word searches within a PDF document. Interdocument searches cannot be performed yet, Adobe said.

The 80-document CD costs \$95, but the equivalent paper ordered from the U.S. Government Printing Office would cost "several thousand" dollars, said Ken Rogers, director of the Office of Business Analysis at the Commerce Department.

"This changes the way—forever—that the U.S. budget and similar documents are released to the public," Rogers said. "These electronic options... are cost-effective, and you can redistribute them very easily."

Rogers said other federal documents may join the budget and tax forms in PDF format. He said the National Institute of Standards and Technology wants to make PDF a Federal Information Processing Standard, a move that would stimulate its use in the commercial world as well.

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Primavera release late but solid

Update will help keep Microsoft at bay

By Michael Fitzgerald

In the software business, the early bird often comes with worms, but to mention other bugs, which is why users sometimes prefer their software late.

So when Primavera Systems, Inc., the leader in high-end project management software, delayed its first Windows product for almost seven months, it did not create an uproar on the user side.

Worth the wait

Primavera in Bala Cynwyd, Pa., recently began shipping its \$4,000 Primavera Project Planner (P3) for Windows program, which was originally expected last August. Customers and analysts contacted, however, agreed that Primavera was wise to wait until its product was ready.

"It was definitely worth the wait," said Alan Waite, principal project controls specialist at Fluor Daniel, Inc. in Greenville, S.C.

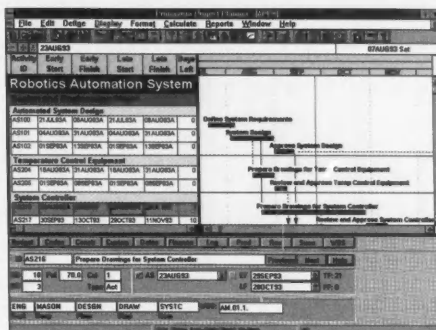
"When you compete against Microsoft, you have to do things right.

[Primavera has] put out an excellent release," said Chris LeTocq, an analyst at Computer Intelligence/InfoCorp in Santa Clara, Calif. LeTocq cited the addition of simultaneous support for multiple users as a key advantage for P3 for Windows. He also cited excellent ease-of-use features such as good use of color and drag-and-drop capabilities.

LeTocq said the update will help Primavera remain the technology leader in the project management software market, staving off Microsoft Corp. and Symantec Corp. He noted that project management really does not have a low end, only a high end and a higher end. The ability to let multiple users share the same file is a distinct differentiator in this market, and Microsoft Project and mainstream packages other than Primavera's do not currently offer this capability.

Users like features

Besides its multiuser capabilities, P3 for Windows has built-in support for Object Linking and Em-



P3 for Windows allows users to attach data from spreadsheets, word processors and other programs

bedding (OLE). This lets users attach data from spreadsheets, word processors and other programs to their project plans. P3 for Windows will even support video clips. It also has ReportSmith, Inc.'s reporting package for customized project reporting, layout and the like, which users said was a big plus.

Joel M. Koppelman, Primavera's president, cited OLE as a way for Primavera to let users take advan-

tage of strong products from other vendors rather than force them to settle for spreadsheets or other programs from Primavera. He said it also allowed Primavera to concentrate on its core product.

No more comas

Primavera worked from the premise that "bar charts put people into a coma," Koppelman said. Primavera significantly reworked its product to give project managers more efficient ways to plan projects and display information.

"This should expand the business for us, now that Microsoft and [Symantec's] TimeLine opened people's eyes up to project management," Koppelman said.

The ability to display multiple project plans at the same time also pleased users.

"I might have two or three or four different work orders in the overall piece of equipment, and being able to see those things grouped together helps convey the image of what we're actually doing," Waite said. Waite currently uses P3 for Windows to manage a staged plant shutdown.

On the way up

Project management looks to be a steady growth market, according to International Data Corp., which pegged it at \$174 million in 1991 and projects it will reach \$535 million in 1995.

Applications

Microsoft adds Power Mac portfolio

By Stuart J. Johnston

As Microsoft Corp. revs up its development machine to deliver applications for the Power Macintosh, it is also working to bring out new versions of its secondary applications for Windows.

Microsoft announced last week that it will ship Power Macintosh versions of its Office applications this summer and release 680x0-based Macintosh versions in the same time frame.

By the end of May, the Redmond, Wash., software titan will also bring out a major Windows upgrade of its Project planning tool that ties into the Office applications as well as Microsoft's workgroup products.

Versions of Excel for both Macintosh systems will feature Visual Basic Applications Edition, and all of the main Office applications will support Object Linking and Embedding (OLE) 2.0, said Robbie Bach, group product manager for Office. Word and Excel will both support Apple Computer, Inc.'s AppleScript, PowerTalk and QuickDraw GX technologies.

Users who purchase the 680x0 versions of Office after April 1 will receive free upgrades when the new versions ship, the company said. This Power Guarantee program also applies to individual Macintosh programs, including Word 5.1, Excel 4.0, PowerPoint 3.0, Works 3.0 and FoxPro 2.5.

Microsoft Project 4.0 adds many of the features that have been included in recent upgrades of the Office applications.

These features include Wizards, Cue Cards, IntelliSense technology and its own internal version of Visual Basic Applications Edition, said Jon Reingold, general manager of the Project business unit.

Project 4.0 also completely supports OLE 2.0 and exposes its internal "objects" to external macro languages designed to take advantage of them through OLE automation.

Additionally, "all the menus and tool bars are consistent with Microsoft Office applications," which makes switching between them more transparent to users, said Bill Koszewski, Project product manager.

Project now includes the ability to assign a "recurring" property to tasks such as regularly scheduled meetings and the ability to make a task dependent on another, which is designated by an arrow linking the tasks.

New links to applications

Project 4.0 also provides links to Microsoft Mail and Schedule Plus, Microsoft's workgroup scheduling tool, so all the participants on a project can easily communicate and perform updates to the project schedule, according to Koszewski.

For example, from within Project, a manager can send electronic mail to team members, requesting that they confirm their assignments or return status on their particular portion of a project.

A calendar view function lets the user see an entire project displayed on a calendar rather than merely as a Gantt chart. A "consolidate projects" function now handles up to 80 separate projects, letting the user examine how resources are allocated across all of them at once.

Project 4.0 will cost \$695, with upgrades for any previous version of Project priced at \$149, Reingold said.

HELP LINE



Part of an occasional series of user tips provided by Corporate Software, Inc. in Canton, Mass.

Lotus Development Corp. 1-2-3 for Windows Releases 1.0, 1.0a and 1.1

Q: When I print my PostScript printer, I am unable to print multiple pages. How can I do that?

A: When printing to a PostScript printer, Lotus 1-2-3 for Windows Releases 1.0, 1.0a and 1.1 use their own internal PostScript drivers, as opposed to passing the job to the selected Windows printer driver. If you wish to use features found in your Windows printer driver, such as the ability to print multiple copies or to edit the font substitution tables, edit the 123W.INI file found in the \WINDOWS directory. In the [PRINTER] section, change the line reading POSTSCRIPT = to read POSTSCRIPT=SYSTEM. This will force Lotus 1-2-3 to use the system printer driver exclusively.

Microsoft Corp. Access Version 1.0

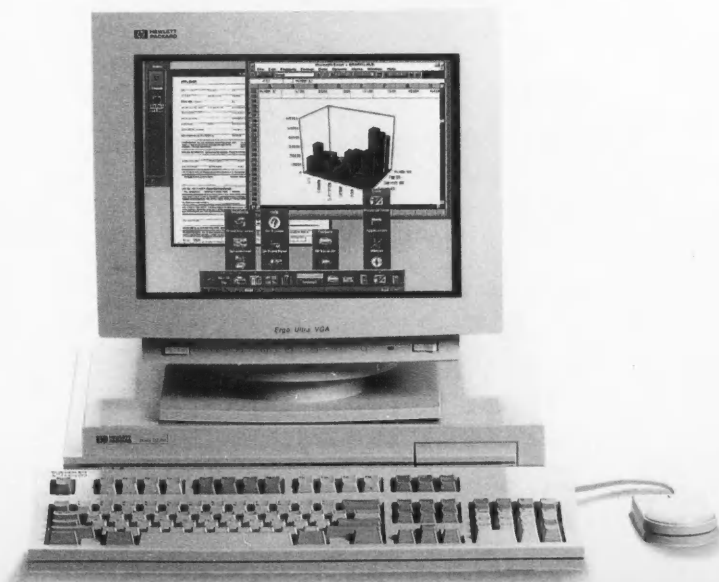
Q: Every time I load Microsoft Access, I have to enter my user name and password. Is there a way to get around this?

A: If your copy of Access has been set up to require a user name and password before use, you can automate the start process by adding two parameters to the command line options of your icon. To do so, highlight your Access icon and select File, Properties. In the Command Line box, add "/USER Username/PWD Password" to the end of the command line (where Username and Password are your user name and password). If your current command line is C:\ACCESS\MSACCESS.EXE, add your user name so it says C:\ACCESS\MSACCESS.EXE/USER John/PWD String.

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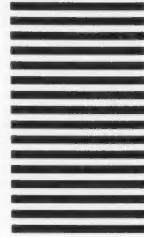
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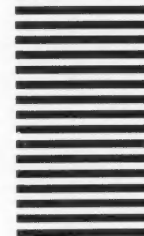
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Desktop Computing

New Products

Wyse Technology, Inc. has introduced Forte GSV, a family of high-end configurable PCs.

According to the San Jose, Calif., company, Forte GSV supports a host of Intel Corp. processors, including the 25/33-MHz i486SX, 25/33/50-MHz i486DX, 50/66-MHz i486DX2, 32-bit Pentium OverDrive processor and 60-MHz, 64-bit Pentium processor.

Five drive bays are available, and the system includes two 32-bit local bus expansion slots and four 16-bit XT/AT bus expansion slots. A built-in Ethernet controller that supports 10BaseT or Thinnnet media makes the Forte GSV network-ready.

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► **Wyse Technology**
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Dolch Computer Systems has announced the DataView series of industrial displays.

According to the Milpitas, Calif., company, DataView panels can be configured as stand-alone monitors with red, green, blue input or combined with a Dolch Video Performance video controller for XT/AT bus or high-performance VESA local bus applications.

The DataView series interfaces to PCs, X Window System terminals and workstations in EISA, XT/AT bus, Motorola, Inc.'s VMEbus and similar bus station environments. It is compatible with Windows 3.x, DOS and Unix.

Prices for the active-matrix monochrome displays begin at \$1,900. Color models start at \$2,900.

► **Dolch Computer Systems**
(408) 957-6575

Physiotronics Corp. has announced Sherlock for IBM PCs running Windows Version 3.1.

According to the New York company, Sherlock is an intuitive and visual filing and retrieval system for individual and networked users.

The product provides instant retrieval of saved files using a "best-fit" lookup that includes string/word/sentence search; eight optional fields that categorize files by document type, contact and keywords; and automatic launching for the correct application and the selected document. Sherlock also provides Novell, Inc. NetWare compatibility with user-assignable network rights for files/

folders and total and seamless integration for most Windows applications.

Sherlock costs \$179 for single users and \$695 for a 10-station LAN-Pack.

► **Physiotronics**
(212) 887-9555

Fodor's Travel Publications, Inc. and **Worldwide Systems Corp.** have announced that Fodor's Worldview TravelFacts is now available through two fax-back services.

According to Fodor's Travel Publications in New York, Fodor's Worldview TravelFacts is an on-demand, travel information product designed to enhance the business or leisure travel experience.

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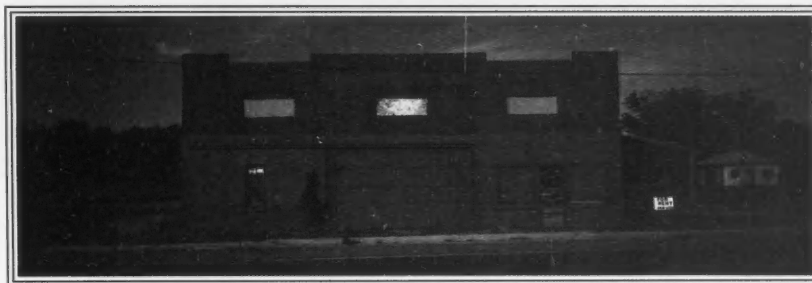
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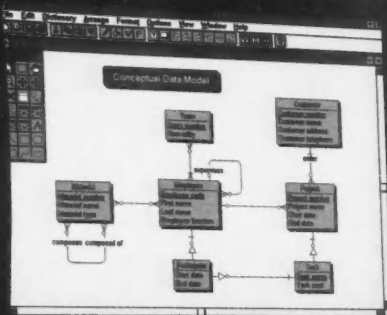
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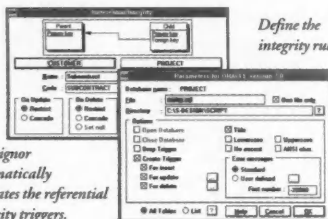


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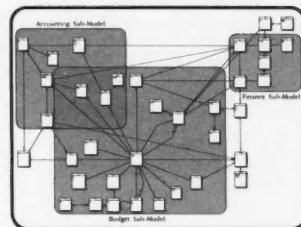
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Workgroup Computing

From supercomputers to the desktop

Workstations reach new heights with increase in speed, drop in price and off-the-shelf applications



By Jean S. Bozman

Although overshadowed by Unix workstations used for commercial applications, high-end workstations are gaining power, fed by a new generation of RISC microprocessors and sophisticated design software.

Powerful desktop and desk-side units are handling processing tasks that ran on supercomputers, mainframes and minicomputers as little as two years ago. They are used by top engineers, designers, architects and film industry animators to shorten the design cycle (see chart).

At Du Pont Co. in Wilmington, Del., about one in five Unix workstations is a high-end machine used for simulation and molecular modeling, said David Pensak, principal consultant for advanced computing technology at Du Pont. The firm has about 2,000 Unix workstations, many of which are Sun Microsystems, Inc. SPARCstations and IBM RS/6000s, Pensak said.

Some firms use the high-end units to create complex designs more quickly and cheaply than before. Pitney Bowes, Inc. uses Hewlett-Packard Co. Series 700 and Digital Equipment Corp. Alpha-based Model 3000 workstations to visualize advanced office products before they are fabricated. The workstations run off-the-shelf advanced design software, replacing applications that ran on IBM mainframes and Digital VAXs only two years ago.

Eliminating paper and repetitive transfers of data are two reasons why Pitney Bowes began using high-end Unix work-

stations in initial engineering and design. The firm hopes to complete the effort by 1996. "We will send the three-dimensional image-binary files to [engineers and outside contractors] to reduce the chance of any dimension or geometries getting lost in the translation," said Ilse Martin, director of operations productivity at the Pitney Bowes research and development offices in Shelton, Conn.

High-end flexibility

High-end machines allow users to edit their blueprints on-screen, thereby reducing revision time for planners. "Most engineers and engineering managers would rather have five or 10 of the biggest workstations they can buy than a slice of a Cray" supercomputer, said Jonathan Eunice, principal analyst at Illuminata, a Hollis, N.H., Unix technology market analysis firm. The reason, he said, is simple: The workstation is on their desk, "and they can use it whenever they want."

Foul-weather warning

The National Center for Atmospheric Research is preparing a new generation of weather-warning software for use at the nation's airports and radar-tracking centers.

"We're using advanced graphics to present a 3-D view of the airspace," software engineer Bill Myers said. "This works in real time, [showing] microbursts of wind shear or gust fronts or areas of heavy rain where lightning is likely. We're identifying the regions where the hazards are."

Simulations of complex weather cells, mathematical analysis of airflow over airplane wings and realistic video animation — once the domain of 1980s-era supercomputers — now emanate from workstation screens. But there is a new level of integration among the different elements of a design, incorporating more layers of geometric data.

"Usually, people doing a conceptualization of a 3-D design will want to put all the pieces together, rotate them, study them and modify them," said Dominic Ricchetti, director of workstation research at Dataquest, Inc. in San Jose, Calif. "They usually have a whole team of people they spin off all the pieces to." Follow-up

Workstations, page 62

Model citizens

User applications for high-end workstations vary widely, from computer-aided design for automobiles and aircraft parts to simulation of violent weather storms and the visualization of synthetic molecules for pharmaceutical companies.

Users say high-end workstations allow them to integrate data formerly stored on separate mainframe and minicomputer systems and let them show data visually through high-resolution graphics. Data formerly presented as rows and columns of numbers on mainframe printouts can reveal new meanings through visual patterns on a screen, users said.

"You initialize a computer model of the atmosphere, and you can watch how it evolves," said Bill Myers, a software engineer at the National Center for Atmospheric Research in Boulder, Colo. "You can run the model faster than real time to predict what the weather will be like."

One Silicon Graphics, Inc. (SGI)-based visual system allows scientists at the research center to see "into" a storm cell and discover wind shear conditions before they are reported by weather stations. Such systems can warn airport control towers of hazardous conditions within a radius of 50 nautical miles.

The high-end systems have changed the nature of user work patterns. Before such workstations were brought on-line two years ago, scientists at the National Center for Atmospheric Research had to reserve time slots to do simulations on Cray Research, Inc. X-MP and Y-MP supercomputers, Myers said. Under the new scheme the weather system modeling work runs interactively on the user's desk, he said.

Other market sectors that make heavy use of high-end workstations include oil exploration, medical research and medical imaging, mechanical engineering of manufactured goods and advanced chip design in the semiconductor industry, according to executives at several Unix vendor firms.

Interactive design techniques shorten the product development cycle, analysts said. Even programmers can leverage the machines' graphics capabilities by using visual patterns to detect errors in users' software programs. The bad code stands out as "spikes" in a smooth surface.

— Jean S. Bozman

High-end Unix workstations

Vendor	Model	CPU speed	Features	Price
IBM	Powerserver 520	60.3 MHz Power	32M bytes to 1G byte	\$45,000
IBM	Powerserver 990	71.5 MHz Power 2	128M bytes to 1G byte	\$127,100
SGI	Crimson VGKT	150 MHz R4400	16M bytes	\$54,400
SGI	Onyx/VTX Graphics	Dual 150 MHz R4400	64M bytes	\$128,800
Sun	SPARCstation 10 Model 514 MP	50 MHz SuperSPARC	64M bytes	\$95,995
Sun	SPARCstation 10 with Freedom 3300*	50 MHz SuperSPARC	32M to 512M bytes	\$187,245

*Option includes Evans & Sutherland graphics accelerator

Graphics accelerators rev up price tags, speed

Graphics accelerators are like booster rockets. They have the power to transform a standard, midrange Unix workstation into a desktop visualization machine. But they can also double or triple a workstation's price tag, depending on their power.

Based on one or more fast RISC chips devoted to graphics floating-point calculations, graphics accelerator boards may have one or two CPUs and five or more chips aboard. Prices for the boards range from \$10,000 to \$60,000, or more.

Graphic accelerators calculate geometric transformations from 2-D to 3-D graphics, taking into account such factors as movable light sources and realistic surface textures. Their computation is blisteringly fast. For ex-

ample, Sun's Freedom 1000, a graphics unit based on a SPARCstation 10, calculates more than 1 million 3-D vectors per second.

Typical of these graphics accelerators are subsystems from Evans & Sutherland and Kubota Pacific Computer, Inc., a division of heavy machinery maker Kubota Ltd. of Japan. Kubota's Denali graphics board is available for Digital's Alpha Model 3000 machines. Sun offers Evans & Sutherland graphics accelerators with its SPARCstation 10 Unix workstations in the Freedom series.

HP's Series 700 workstations have the CRX 24 Z and CRX 48 Z graphics option cards. Silicon Graphics' Reality Engine has multiple graphics processors included as standard components in its high-end Onyx system.

— Jean S. Bozman

PeopleSoft port to Sybase hits snags

By Kim S. Nash

Trouble porting applications to the latest version of Sybase, Inc.'s SQL Server database has forced financial software maker PeopleSoft, Inc. to push back the release of its products for that platform until at least late this year, PeopleSoft said.

In its so-called System 10 release of SQL Server, Sybase included some features missing from previous editions of the database, for example, support for program-mable cursors. PeopleSoft packages support other databases with similar features, such as Oracle Corp.'s Oracle 7, but Sybase's particular implementation of those added functions has thrown PeopleSoft Financials for a loop.

Originally planned for release next quarter, PeopleSoft Financials for Sybase now has no definite ship date. "If it takes a year or until next year to [make the migration], then that's what it takes," said Ken Morris, PeopleSoft senior vice president.

Cursor woes

Cursors, which provide a programmable interface into the database, are the primary problem, Morris said. Previously, SQL Server used precompilers to emulate cursors. Also making waves is the fact that SQL Server limits to 16 the number of tables a single SQL statement can reference.



A Sybase product developer recently spelled out on CompuServe some of the more pertinent changes to SQL Server that would affect application upgrades. Along with cursor supports, users should note that most flags and queries must be rewritten to get the same responses they got on older SQL Server releases. And if log space runs out on SQL Server System 10, all users trying to update the database will be suspended. A stored procedure defining larger thresholds must be written by database administrators to avoid this.

With Sybase, any work tables that the engine uses to process a query are deducted from that limit—and the latest SQL Server uses more tables for processing than previous versions did, Morris said.

Engineers from both PeopleSoft and Sybase are studying the problem and have yet to create a solid plan for a fix, he said.

Unless Sybase changes its database engine, PeopleSoft could very well end up having to build a separate set of code for Sybase than is used for Oracle or other databases PeopleSoft supports, Morris acknowledged. He added that no decision has been made.

PeopleSoft's problem is not an anomaly and holds client/server lessons for corporate information systems shops, said Rich Finkelstein, an analyst at Performance Computing in Chicago.

The pith of the matter: Anyone building client/server applications must choose between optimizing software for the quirks and features of a single database or adopting a least common denominator approach of supporting multiple databases at basic levels.

A single set of application code cannot easily be ported to other platforms, Finkelstein said. Other third-party software firms such as

Platinum Software and Dun & Bradstreet Software, have skirted the issue by supporting only Sybase.

"But the problem with that method is you can't call yourself an open system," he noted.

PeopleSoft wrote its original applications for Gupta Corp.'s SQLBase using PeopleTools, a set of proprietary, third-generation language tools. Migrating those packages to Oracle was not painful because SQLBase and Oracle share similar features. But Sybase is different, Finkelstein said.

"PeopleSoft has stumbled across the problem that the same application won't run across Sybase, Oracle and DB2," said Malcolm Colton, director of product management at Sybase.

No skin off its nose

A lack of applications for SQL Server System 10 will not hurt PeopleSoft's sales growth this year, said International Data Corp. analyst Jennifer Scholze.

Although Sybase is gaining in database market share, many buyers have opted to build rather than buy client/server applications, she explained. Thus, sales of "Oracle and DB2 applications should be enough to keep [PeopleSoft] going on the tremendous roll they've been on," Scholze said.

PeopleSoft is not worried.

"We've probably lost some [deals] because we don't have a Sybase app," acknowledged Ken Morris, senior vice president, "but we haven't been dependent on that platform for any of our major growth to date."

In 1993, PeopleSoft sold its Financials line to about 40 of its 320 customers. Most of those users are on Oracle. "Some people are asking for Sybase, but we haven't really had much product there all along, so demand is not earth-shattering," Morris said.

At least one large user, Conti-

nental Grain Co. in New York, bought PeopleSoft human resource applications on the assumption that PeopleSoft would support Sybase by the time the IS department was ready to install client/server systems. They had no such luck, said Roger Rudenstein, project leader at Continental Grain. The company opted instead for Oracle and now plans all future mission-critical development for Oracle 7, Rudenstein said.

PeopleSoft wins either way, but Sybase doesn't.

Manufacturing software

Avalon unveils client/server setup for user group

By Kim S. Nash
TUCSON

One of the few manufacturing software makers with client/server applications in production, Avalon Software, Inc. recently previewed the next release of its CIIM product line at an annual user group meeting here early this month.

The company also outlined a strategy for modernizing users' factory floors with client/server systems.

Avalon's plan, said Chief Executive Officer Gary Gibson, is to get its foot in the door at one site of a multipoint manufacturer, then proliferate from there.

The company "seems like it's in a good, solid position in the market, ahead of many other manufacturing companies that still dwell in proprietary operating systems," said James Mendelson, managing director at SoundView Financial Group, Inc. in Stamford, Conn. He cited Marcam Corp., Systems Software Asso-

ciates, Inc. and others that cater to IBM AS/400 and Digital Equipment Corp. VAX users.

Avalon's Computer Interactive Integrated Manufacturing (CIIM) product line includes order-processing, inventory, distribution, financial and other modules that run against Unix databases from Oracle Corp. or Sybase, Inc.

Competitors include Oracle, which sells financial and manufacturing applications, and SAP America, Inc. Gibson said The ASK Group, Inc., which has a big presence at VAX manufacturing sites, is not a factor because ASK only recently started selling a Unix-based product.

The choice came down to Avalon or Oracle applications for M&N Plastics, Inc.,

an automobile parts supplier in Sterling Heights, Mich. The company had outgrown a largely PC-based system installed several years ago and wanted to use the Oracle database, explained Jim Bronersky, vice president and general manager. "But we figured out that Oracle apps would have been about 25% more money than Avalon," he said. "And we got a good feeling from these guys."

Implementing Avalon products takes six to 18 months, on average, Gibson said. IBM, which uses Avalon to run its

RS/6000 plant in Austin, Texas, re-engineered the facility and installed a Sybase version of CIIM in less than a year, said Peter Stoll, senior manufacturing systems analyst. The facility plans to retire an IBM 3090 main-

frame-based manufacturing resource planning system by the end of next quarter, Stoll said.

CIIM 8.6, which shipped in January, supports the Oracle 7 database. Support for Sybase's latest database, however, is not expected until next quarter when CIIM 9.0 is due out. Avalon officials said

they have not seen any major problems porting their application to Sybase System 10, unlike PeopleSoft, Inc., another client/server applications maker (see story above).

Because Avalon uses native development tools from Oracle and Sybase to generate separate application sets, upgrades are usually smooth when either vendor changes the product, said Doug Souza, vice president of development.

Domino effect

Part of the reason a Sybase System 10 version is not yet out, Souza said, is because Avalon is migrating from Sybase's APT generator to Sybase's new Momentum line of development tools, most of which are still in beta testing.

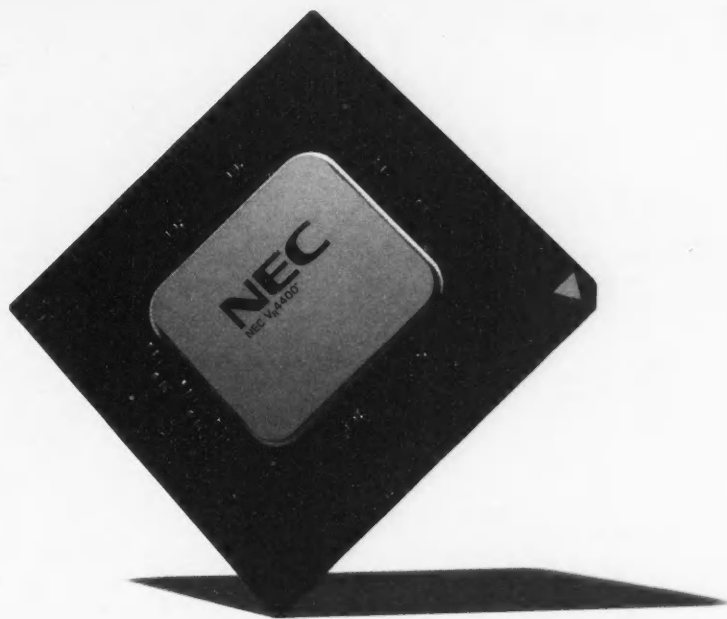
Conference attendees got a sneak peak at CIIM 9.0, which includes the following new features:

- Workflow features built into modules to organize various manufacturing tasks and document routing.
- Modules for purchasing, procurement, accounts payable and receivable.
- Inventory enhancements such as tracking parts by lot number, batch number or other user-defined units.
- Better financial reporting, executive information systems capabilities.

Rapid growth

Avalon figures

	1992	1993
Sales	\$5 million	\$20 million
Customers	100	150
Employees	145	195



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Ellis Booker

Counting on paper cuts



I got a nasty paper cut recently while opening a press release about a new document imaging system.

While bandaging my finger with a handy piece of Scotch tape, I glanced around my office at the dozen or so knee-high piles of paper unceremoniously stacked on the floor or leaning against filing cabinets. This work space seemed not just cluttered and chaotic but downright dangerous—a million paper cuts waiting to happen.

What became of the electronic document imaging revolution? Why hasn't the "paper tiger" been tamed?

Just two years ago, one market research firm predicted an imaging market of \$12.5 billion by 1995. Today, most analysts have dramatically scaled back their expectations and foresee a \$3.5 billion to \$4 billion market by then. This isn't to say that a \$4 billion industry is meaningless or that companies with document imaging installations haven't seen paybacks in speed, productivity and money.

But despite its promise, document imaging has only tackled a fraction of the work load, leaving the majority of us suffering paper cuts in cluttered offices.

Why?

Unquestionably, the high cost of robust, scalable imaging systems has been a serious stumbling block for users.

No so bad after all

Scott McCready, director of image systems at International Data Corp./Avante in Framingham, Mass., bucks the conventional wisdom that businesses are drowning in inefficient, paper-based procedures and are willing to pay for imaging at any cost.

"Most of the companies we've studied are constantly innovating their business processes," McCready says, arguing that an imaging vendor that "asks for \$2,000 per user to automate what is already a pretty efficient system" shouldn't be surprised at getting the cold shoulder.

A second serious problem for potential users has been the crying lack of interoperability standards for imaging and document management systems.

The upshot is that the document imaging "solutions" we hear about are generally homogeneous departmental systems that treat very structured kinds of work. These are the heads down, production applications—classically, the claims processing department—where cost-justification of imaging is easiest.

Vendors will have to do two things immediately for imaging and, more broadly, document management systems to be more than these one-shot solutions and take off as an enterprise-wide utility.

First, they must push down the cost of the software

component that runs on the client workstation. This will likely mean bundling this capability into the operating system itself. For instance, Microsoft has said it plans to embed imaging APIs in future versions of Windows and its core desktop products, and Novell will release this summer a set of NetWare Loadable Modules to add imaging services to NetWare networks.

Second, vendors must agree on standards—or at least a set of APIs—for the back-end management of this data, whether it be bit-mapped images of documents, word processor files, electronic-mail messages or ASCII text coded in Standard Generalized Markup Language. Recent movement on this front includes the consortium support of Apple's soon-to-be-released OpenDoc architecture, as well as the vendors and large users involved in the Shamrock Document Management Coalition, which plans to publish its first API this year.

Standards are the real issue

It seems to me that standards, more so than low cost, are of paramount importance. In fact, the promulgation of low-cost entry-level imaging tools could lead to several kinds of nightmares if users come to rely on them.

That's because the convenient transporting of document images and text among individuals—a la E-mail—is clearly *not* a solution to the information management/information access/workflow woes of IS executives.

On the one hand, I'm confident the industry will address these issues. On the other, I'm sure that while all this looks good on paper, it will take time. So for the time being, I'm keeping a box of Band-Aids on my desk.

Booker is *Computerworld's* Chicago bureau chief.

Workstations

Sun's Voyager is made for nomads

By Jean S. Bozman
MOUNTAIN VIEW, CALIF.

Sun Microsystems, Inc. tried to break the mold of traditional Unix workstation design last week with the launch of its compact Voyager machine.

Outfitted with a flat-panel display, upright CPU unit and single-unit magnesium casing, Voyager fits in 35% of the space required for a Sun SPARCstation. Sun said it is roughly twice as fast as a standard SPARCstation LX machine.

But early users and analysts were not sure how to classify the machine. It weighs 13 pounds—nearly twice the weight of a standard notebook computer—and prices start at \$10,000 for a unit with a monochrome display.

Where does it fit?

"It's what we used to call a luggage," said Gene Friedman, vice president of applied technology at The Chase Manhattan Bank NA, which has more than 300 Sun workstations in its New York offices. "But we tend to have Suns on desktops as specially configured workstations. So at least for the moment, I do not see where it fits into our architecture."

Sun executives said Voyager is intended for "nomadic" users. To that end, a new "resume" feature

will let users reboot within 45 seconds, restoring applications to how they appeared when power was turned off. And a new infrared communications port allows data

transfers, Voyager's \$10,000 price tag (\$15,000 for a color monitor unit) may be too high for many low-end workstation users, analysts said.

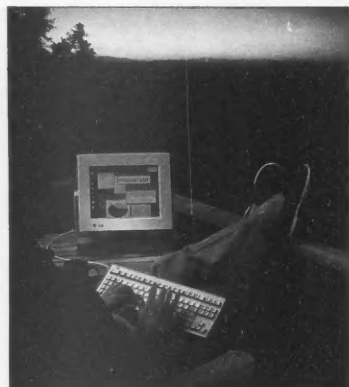
"It's simply priced too high to compete with standard workstations," said Paul McGuckin, a Unix analyst at Gartner Group, Inc. in Santa Clara, Calif.

However, Bob Pearson, director at Sun's advanced desktop systems division, said volume discounts could drive the price down to \$7,000 or less. Costly flat-panel displays boost the price, he said.

Sun said it expects high interest among financial traders on Wall Street and in Japan, where real estate—and desktop space—is at a premium.

Analysts said the space-saving innovations are also likely to show up in future Sun designs.

While Chase will keep its custom trading screens for now, the concept of compact workstations is appealing. "Three workstations on a trader's desk is normal," Friedman said. "This is a step in the right direction."



SPARCstation Voyager takes up about one-third the space of a standard workstation

transfer with handheld computers and personal digital assistants.

"It's kind of a crossover between a full-blown workstation and a laptop," said Duane Wald, a software engineer at Boeing Computer Services in Bellevue, Wash., who has used a Voyager since January at work and at home.

Despite its packaging innova-

Workstations

CONTINUED FROM PAGE 59

work is often done on less costly, midrange workstations, analysts said.

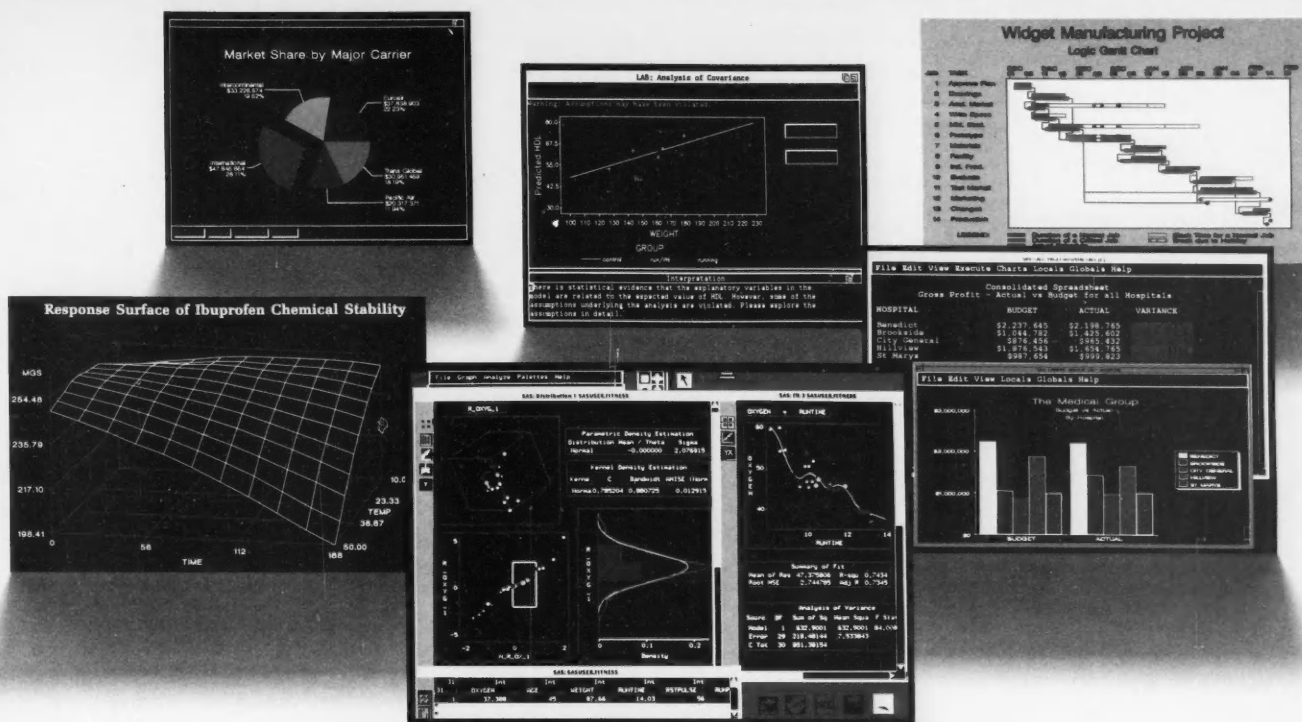
Simulation of product behavior is another use for high-end workstations, users reported. At Dunlop Tires, Inc. in Buffalo, N.Y., IBM RS/6000s are used to check structural designs through simulation techniques, said Rudy Bauer, manager of materials, process research and development. An RS/6000 Model 520 is gradually taking over work traditionally done by an IBM 4381 mainframe running the Catia computer-aided design (CAD) program, Bauer said. There are also plans to connect multiple RS/6000s at Dunlop design centers worldwide.

At Du Pont, typical high-end applications include CAD work, integrated circuit design, molecular design and simulation programs, Pensak said. "We haven't seen any real paradigm shifts that are being catalyzed by this speed" of high-end workstations, he said. "It's more of an incremental enhancement in software." That is one reason why Du Pont assigns high-end workstations to the scientists and engineers who need them most. "We're trying to optimize the functioning of the organization as a whole," Pensak said. Buying "a large number of moderately powered workstations is almost always more beneficial than [buying] a few high-powered ones."

Industry analysts said the high-end machines will act as a testing ground for advanced technology that will gradually move to mainstream workstations. As hardware costs decline, commonplace high-end features such as texture mapping, a technique that "layers" graphical information on 3-D blueprints, and virtual reality software will evolve into mid-range machines, analysts predicted.

High-end slices

"It's a piece of a piece of the workstation pie," said Dominic Ricchetti, director of workstation research at Dataquest. In 1993, workstation sales reached roughly \$10.2 billion, Ricchetti said. Of that, about \$1.6 billion in sales were related to 3-D graphics workstations. Of that "slice" of the market, only about \$700 million was related to high-end units.



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Briefs

LANTastic 6.0 debuts

Artisoft, Inc. announced Version 6.0 of its LANTastic peer-to-peer network operating system, which is expected to ship this month. It has a universal client feature that is said to provide transparent concurrent connection to Novell, Inc., Microsoft Corp. and IBM network servers. Version 6.0 also includes the ability to exchange mail with electronic messaging systems from Novell, Microsoft, Lotus Development Corp. and WordPerfect Corp.

Multimedia training

Novell, Inc. and Horizons Technology, Inc. have announced that they will jointly develop programs to train customers and resellers on how to design and implement networked multimedia solutions in NetWare environments. The programs will use Novell's NetWare Video 1.0 and Horizons Technology's multimedia development tools and video compression technology.

Lotus ships Mac Organizer

A good half year behind schedule by some users' accounts, Lotus is finally shipping a Macintosh version of its Organizer group scheduling software. The software requires Lotus' CC-Mail to run. Lotus plans to port Organizer to other platforms, including DOS, later this year.

Novell authorizes dealers

Unisys Corp. announced that its Philadelphia Open Systems Support Center has been certified by Novell as a Novell Authorized Service Center for the full suite of Novell products for users across the U.S. The previous week, Digital Equipment Corp. announced that its service centers worldwide have been authorized by Novell to participate in the service center program.

SCO announces front end

The Santa Cruz Operation (SCO) announced a new Windows-compatible front end to the Internet. The SCO Global Access product is built on top of the NCSA Mosaic icon-based user interface, under license from the National Center for Supercomputing Applications (NCSA) at the University of Illinois at Urbana-Champaign. Users will need PC/X desktop software and SCO Unix server software to make the package work, according to SCO officials. Global Access, bundled with SCO Unix, is set to ship next month at a price of \$895.

Novell updates NT NetWare redirector

By Elisabeth Horwitt

Novell, Inc. recently updated the beta version of its NetWare redirector for Microsoft Corp.'s Windows NT, adding full NetWare support for DOS applications running under NT.

Novell plans to make the client software generally available by midyear, with a price of \$99 for a full corporate license.

A plan of its own

Microsoft, meanwhile, plans a general release of its own NetWare requestor for NT by the end of this month or early next month, company spokesman Dwight Krossa said. The NetWare client will be included in Microsoft's upcoming DayTo-

na version of NT.

However, Microsoft does not plan to provide its NT client with support for NetWare Directory Services (NDS) until "customers say it's mandatory," Krossa said. Users can still log onto NetWare 4.x servers via bindery emulation, he added.

But without NDS, clients cannot access any NetWare server on the enterprise with one log-on, a Novell spokesman said. Novell plans to provide NDS support with the final version of its NT redirector.

Tear down

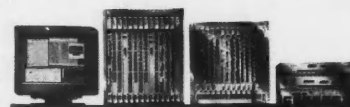
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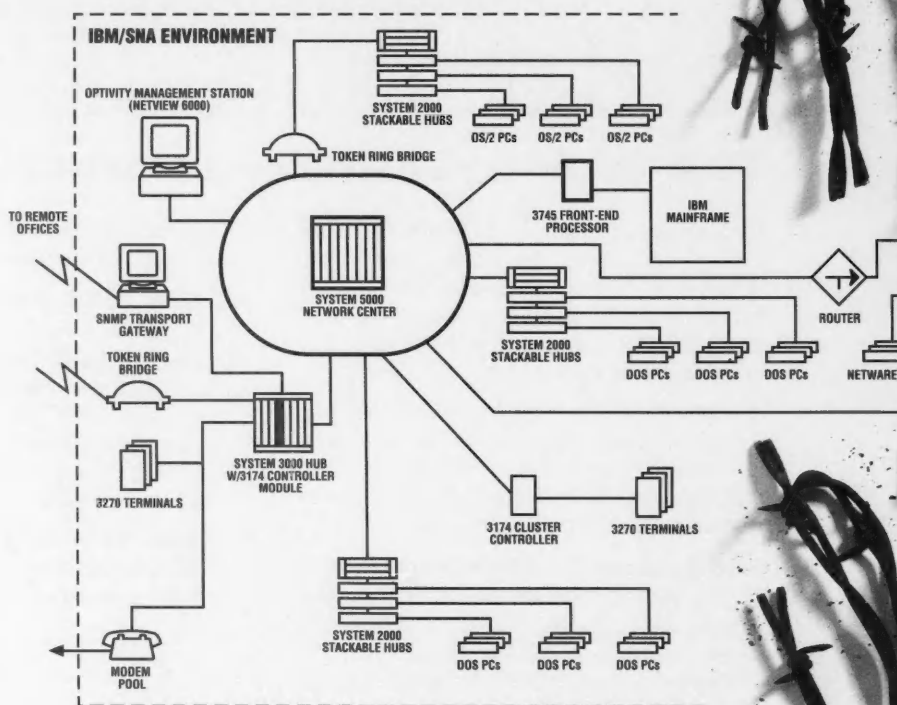
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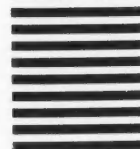
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Workgroup Computing

New Products

Systems Union, Inc. has introduced a Windows-based graphical user interface designed to provide multifunctionality to users of its SunSystems financial management and software offerings.

According to the White Plains, N.Y., company, SunSystems Windows includes state-of-the-art, user-definable

macro button capabilities that allow a single keystroke or click to instantaneously link and execute macro tasks such as enterprisewide consolidations and currency revaluations in multilingual formats.

Pricing starts at \$12,000 for a PC LAN.

► **Systems Union**
(914) 948-7770

Data Access Corp. has introduced DataFlex 3.04 for Unix, an application devel-

opment system. According to the Miami company, the product is an object-oriented, fourth-generation language application development environment and database management system.

DataFlex 3.04 includes terminal- and system-independent support for colors, character cell graphics, international character sets and user-defined function keys.

The product also employs the multi-user capabilities and advanced memory

management facilities offered by the Unix operating system.

Support for a variety of Unix platforms is provided.

Pricing starts at \$795.

► **Data Access**
(305) 238-0012

MicroNet Technology, Inc. has introduced RAIDbank, a fault-tolerant redundant disk array storage system.

According to the Irvine, Calif., company, RAIDbank is available in rack-mount, desktop and tower configurations and supports redundant arrays of inexpensive disks (RAID) Levels 0, 1 and 5.

Features include single-connector attachment drives for higher reliability, audible alarms to indicate drive failure, variable time rebuild to reduce CPU use during peak periods and sequential motor spin-up to reduce power load at system boot time.

Dual front-mount, "hot-swappable" power supplies are standard.

RAIDbank costs \$4,895 and includes two hot-swappable power supplies. Prices for drive modules range from \$1,595 to \$3,395.

► **MicroNet Technology**
(714) 453-6100

SQL Financials International, Inc. has added Sybase, Inc. and Microsoft Corp. SQL Server database support to its client/server general ledger and accounts payable products.

According to the Atlanta company, the general ledger offers budgeting, consolidation and allocation capabilities.

Without programming, users can define any financial, responsibility, profitability or management report.

The accounts payable system lets users control vendor information, invoicing procedures and payment activities.

The product also handles foreign currency gains and losses as well as unlimited bank accounts. It automatically reconciles and balances intercompany accounts.

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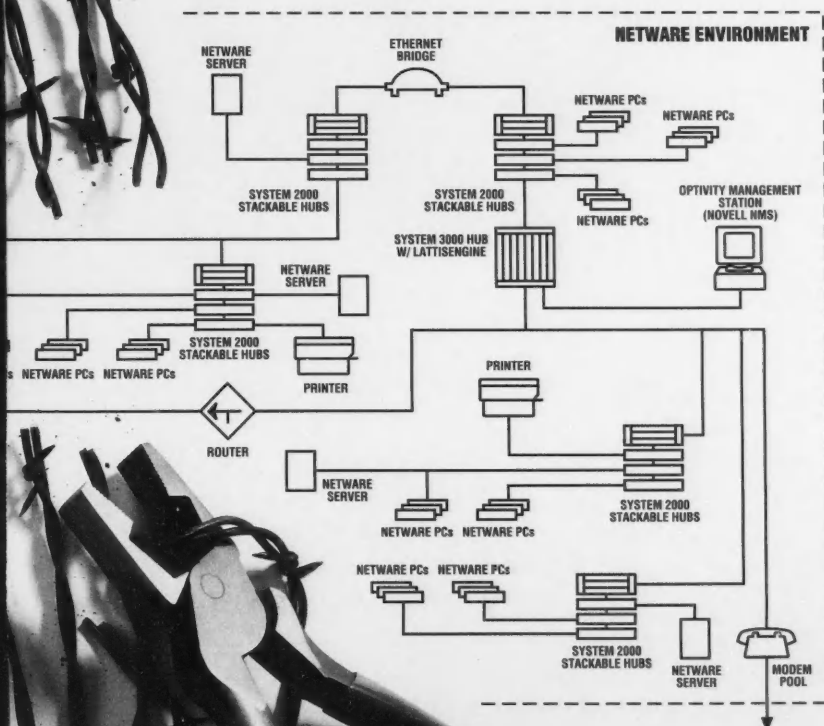
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■ **NOVELL.** The Past, Present, and Future of Network Computing.

Elisabeth Horwitt

Client/server standards: No easy task



As corporations get serious about implementing platforms to manage their enterprisewide client/server installations, the network systems management industry is having a standards crisis, just as the young network management industry did a few years ago.

Standards are needed to define how a management system can collect key information from different client and server systems, as well as the database, E-mail and workgroup applications running on them. Standard APIs are needed to define how different vendors' performance, configuration and problem management applications can communicate with one another and with a management platform.

Not perfect, but it works

SNMP provides that standard to the network management industry. Sure, it isn't perfect; you still have each router, bridge and hub company adding its own specialized extensions to the SNMP management information base so that no two devices are managed exactly alike. Still, the industry has coalesced around the Internet Engineering Task Force standard enough so that users can essentially manage whatever internetworking and LAN equipment they've got

Horwitt, page 72

Prudential takes frame-relay cure

High-speed AT&T-based network will enable sharing of patient records

By Thomas Hoffman

Positioning itself for anticipated health care industry reforms, The Prudential Health Care System is in the midst of implementing a high-speed frame-relay network that is expected to dramatically reduce the time and costs placed on participating physicians to share patient information.

The AT&T InterSpan frame-relay service, which Prudential's Southern Group Operations began installing in October, will link up to 45 member health centers in the southeastern U.S. from Richmond, Va., to Miami by next year.

The network, in which Prudential is investing \$2 million to \$3 million annually over the next few years as it links additional centers, will replace an IBM mainframe SNA communications topology now limited to providing member physicians with eligibility information.

The AT&T frame-relay network—which includes AT&T StarLAN and StarWAN bridge routers, AT&T SmartHub XE smart hubs and AT&T StarSentry network and systems management software—will allow doctors to share patient information, such as digitized X-rays, magnetic resonance imaging (MRI) and CAT scans.

Mainframe shortcomings

"The Prudential mainframe systems made no attempt to provide physicians with ongoing care data, and that's what's exploding out of the city and health center level," said Andrew Garling, chief information officer at Prudential Clinical Information Systems in Atlanta. Approximately 30% of Prudential's patient visits in the Southeast are made at health care centers other than its primary facility. The health services provider needed a way to transport patient records electronically so physicians



CIO Andrew Garling: Prudential is positioning itself for the federal government's health care reform initiatives

could share expertise when making diagnoses, Garling said.

Garling said the frame-relay network will help Prudential Health Care Systems and its members reduce the costs of duplicating patient records at various offices and will slash communications costs by switching from expensive T1 services to frame relay. Although Garling declined to estimate the anticipated cost savings, he expects those returns will be partly offset by increased wide-area network management costs.

New life for older machine

Garling said Prudential's IBM 3090 mainframe will be reconfigured to serve as a data warehouse. The company is planning to integrate AT&T's InterSpan Asynchronous Transfer Mode service into the network by year's end.

To date, Prudential has linked eight cities through the frame-relay network. Because its health centers in Orlando and member sites in Atlanta currently have LANs in place, Garling said those sites will be brought into the frame-relay network later. Five Prudential centers in Nashville will be brought onto the network by midyear, and five in Jacksonville, Fla., will be added by the fall. Garling said Prudential expects to have 75% of its health centers on the network by year's end.

Garling said Prudential's frame-relay plans were made with an eye on President Clinton's planned health care reform. "By creating an integrated delivery system, we

Prudential, page 77

At a glance

**Prudential Health Care System's
Southern Group Operations
Atlanta**

• **Membership:** 600,000 patients.

• **Locations served:** Atlanta; Charlotte, Raleigh/Durham/Chapel Hill, N.C.; Jacksonville, Orlando, Miami/Fort Lauderdale/Palm Beach, Tampa Bay, Fla.; Memphis and Nashville; Richmond, Va.

• **Services provided:** PruCare or PruCare Health Maintenance Organization; PruCare Plus, Prudential Community Care; Prudential SeniorCare.

LAN/mainframe security addressed

By Elisabeth Horwitt

Proginet Corp. recently said it will integrate Novell, Inc.'s NetWare Directory Services (NDS) with IBM's Resource Access Control Facility (RACF) host security system. The long-term goal is to provide a single log-on and security administration structure across NetWare and IBM mainframe environments.

Information systems managers lauded the idea of simplifying administration in mixed environments. However, they said they have reservations about merging Novell and IBM mainframe security systems into one.

The initial product, scheduled to ship by year's end, will implement limited NDS functions on IBM MVS mainframes. This will ensure that users added to RACF's security/validation files are

automatically added to Novell's global directory service, said Joe Mohen, chief technology officer at the Uniondale, N.Y., company. However, administrators will still have to manually input subsequent changes made to user profiles with the first release, he added.

Mix and match

In the longer term, Proginet plans to provide full synchronization between the two systems so that users validated by RACF can transparently access NetWare server resources and vice versa, Mohen said. Users would also be able to administer a mixed NetWare/IBM host installation from either RACF or NDS. Mohen gave no delivery time frame, however.

Novell intends to work with a number

of partners to further integrate IBM hosts with NetWare services and directories, company spokesman Bob Young said. But Proginet is the furthest along "in commitment and probably development" of such a product, he added. Novell is not involved in the development.

Cautious users explained some of their security concerns.

"It's nice to have separate passwords that are enforced in different areas so that breaching one [security system] does not automatically breach all," said Tom Riedl, area manager at National Semiconductor Corp.'s East Coast division.

He also noted that replacing local administration with centralized management "makes it too difficult to make mi-



nor changes or set ground rules" for each local user group.

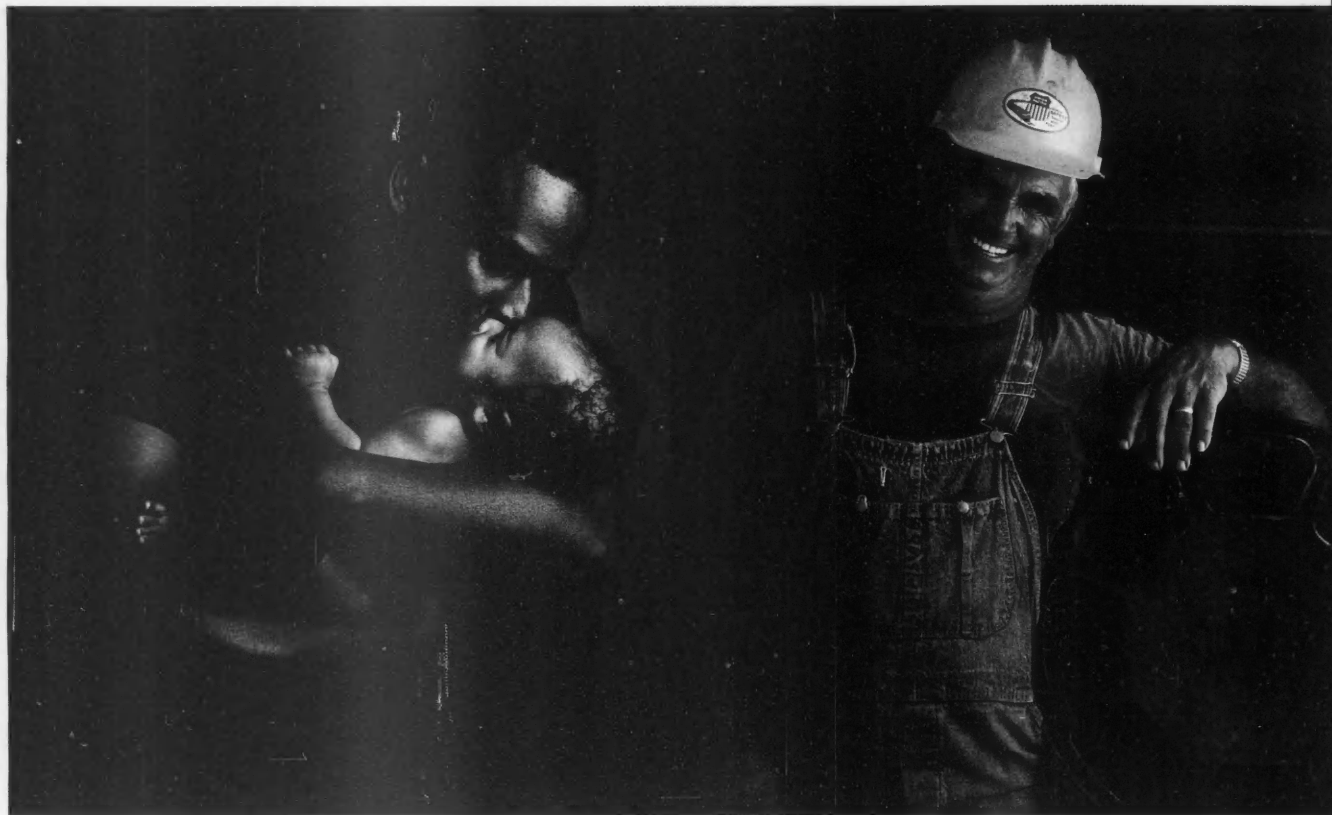
Suntrust Services Corp. would like its NetWare servers and IBM mainframes to be guarded by a single, centrally administered security system because the current two-tiered system is unmanageable, according to Lee Gray, information security analyst at the Atlanta bank holding company.

LAN immaturity

The ideal, however, would be to implement RACF on NetWare—to not provide NetWare users with access to mainframes via NDS, Lee said. "Security on LANs is nonexistent compared to mainframe security, which is comprehensive and has had several decades to develop."

Proginet's future product will not invalidate RACF security, Mohen said. Rather, when a NetWare user requests a host resource, NDS will call IBM's security system for validation.

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code and as a result, easily enabled their existing applications to be moved to target environments.

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But rather than just blow our own horn about the IEF for Client/Server, we asked Mike Quintero, Manager of the Development Center, Data Administration and Design at Blue Cross and Blue Shield of Florida, and Don Black, Business Systems Consultant of Union Pacific to join in.

Mike: "We had all the hooks up in one week and it only took one more week to build the application and generate code. It was a snap."

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SynOptics sets sights on simplified net administration

By Stephen P. Klett Jr.

SynOptics Communications, Inc. last week announced a partnership program designed to provide users with turnkey networking products that simplify systems installation and configuration in enterprise and branch office sites.

The LattisEngine Solution Partner Program is built on SynOptics' LattisEngine/486, which was announced last fall. Based on the Intel Corp. i486 microprocessor, this server module was designed to integrate distributed software applications into the company's hubs.

So far, six vendors have signed up for the program, including Novell, Inc., Intel, Lotus Development Corp., Oracle Corp., Eicon Technology Corp. and Synch Research. SynOptics is working with IBM to bundle the OS/2 operating system with the LattisEngine.

Each of these vendors will provide technology to support the following three areas:

- **Communications.** This includes technologies such as SNA LAN gateways, Synchronous Data Link Control conversion and concentration, multiprotocol routing and bridging and support for frame relay and X.25 protocols.

- **Network management.** This includes Simple Network Management Protocol support, LAN protocol analysis, distributed agents and management applications.

- **Application services.** This is primarily groupware applications such as document databases, electronic mail and workflow.

Novell, for example, will bundle its NetWare Multiprotocol Router Plus communications

software on the LattisEngine. Lotus will bundle Notes, and Oracle will bundle its database software.

In addition to the multiprotocol router software, Novell will also develop branch office products for the LattisEngine as part of an agreement initiated with SynOptics last year. Novell will provide master versions of NetWare, NetWare for SAA, SNA Links and NetWare Management Agent to each of the program's configuration partners for installation on the LattisEngine. Configuration partners include Westcon, Inc., Ingram Micro, Inc. and Tech Data Corp.

Close in price

Several other hub vendors offer server modules for their hubs in the same price range as the LattisEngine.

These include Cabletron Systems, Inc., Chipcom Corp., IBM and Network, Inc.

"Theoretically, this program will give us one tried-and-true solution, eliminating the need to go out and find, say, three separate parts that will work well together on our own," said one SynOptics user who asked not to be identified. For example, he said LattisEngine would let him integrate the functionality of a stand-alone communications server into a wiring closet to put everything under a single point of management.

Codeveloped with Intel and Novell, the LattisEngine will be available in two versions. The Model 3486 is a two-slot module for the Lattis System 3000 chassis. Based on the 66-MHz i486DX2 microprocessor, it has a Peripheral Component Interconnect bus with Industry Standard Architecture support. It is shipping now.

The Model 2486 is a stand-alone version for small workgroups that use SynOptics' Lattis System 2000 hubs. It will have all the functionality of the 3486 and is slated to ship in the third quarter. Prices will range from \$5,000 to \$8,000.

Baby Bells make pitch to network service developers

By Ellis Booker

In a move that could speed the creation of new services on its public telephone network, Bell Atlantic announced the creation of a third-party software developers program.

The program, announced at the recent Computer Telephony Expo in Dallas, is aimed at helping developers create custom applications for the Advanced Intelligent Network (AIN), the database-controlled architecture for the public network that Bell Atlantic and the other regional Bell holding companies have pursued for the past several years.

"We're trying to get our [new product] cycle closer to what's found in the computer world," said Myles Mendelsohn, director for new business development at Bell Atlantic.

Waiting for service

Phone companies, he said, have historically waited on their central office switch vendors — principally AT&T Network Systems and Northern Telecom, Inc. — to put new services and features into their proprietary switches, a process that can take years.

As part of the program, Bell Atlantic announced an agreement in principle with Novell, Inc. to use its AppWare development tools as the

graphical interface into the AIN. The ultimate goal is to let users change and customize their network services via AppWare, Bell Atlantic officials said.

Bell Atlantic said it would also issue AIN-related guides and simulators, as well as allocate lab space at its Silver Spring, Md., facilities for developers to work on the AIN platform.

Sense of urgency

Telecommunications analysts observed that all local phone companies, anticipating pitched competition in their local loop franchises by wireless and long-distance carriers, are striving to shrink the time it takes to offer new services.

"There's a sense of urgency here. Clearly they want to have a foot in the water," said Charlie Robbins, director of communications research at the Aberdeen Group in Boston. Robbins said other phone companies, notably Bell South and Pacific Bell, are on the same track.

Bell Atlantic also announced last week the first third-party developer in its new program. Telosquent Communications Corp. in Billerica, Mass., will use the AIN tools for its Distributed Call Center (DCC), a PC-based application for Integrated Services Digital Network networks. Telosquent and Bell Atlantic will jointly market DCC to customers.

Horwitt

CONTINUED FROM PAGE 69

— often with their applications of choice — on Hewlett-Packard's OpenView, IBM's NetView/6000 or Sun's SunNet Manager.

Unfortunately, coming up with a comparable standard for managing client/server systems is looking like a much tougher proposition.

Let's start out by disqualifying SNMP for the job. It may work fine for managing routers and bridges. However, most experts agree that its centralized polling method of collecting alerts and statistics is too cumbersome for managing a corporatewide client/server installation. Simply monitoring the thousands of client workstations that typically reside at a Fortune 500 company can break a Sun workstation. Most vendors and industry analysts agree that a client/server management system must be distributed so you have domain managers responsible for managing specific groups of clients and servers or a particular application, such as security or performance management.

SNMP 2, the new version of SNMP, is said to support domain management, as well as a more efficient way to gather management data from agents. However, client/server systems management vendors have not exactly rushed to adopt the protocol. When asked why, most of them claim the market demand is not there yet.

Well, of course not. Users don't generally demand that their vendor support a particular standard per se. They ask

for certain things that are only possible if the industry agrees to support that standard. In particular, they want a broad choice of applications that will run on the user's management platform and manage whatever mix of client and server systems a company happens to have.

Not a solution

Perhaps SNMP 2 is not the way to go for client/server systems management. The protocol is still based on a polling mechanism that requires a central station to periodically go out and ask managed devices for information. Some up-and-coming vendors, such as OpenVision, IBM, HP and Legent, are basing their systems on object request broker technology, which allows agents residing on the managed system to proactively and interactively let the management application know when something is amiss.

There is reason to hope that this latest wave will coalesce around the Object Management Group's (OMG) Common Object Request Broker Architecture (CORBA). However, as an OpenVision spokesman is quick to point out, the OMG is only providing specifications; vendors are, as usual, coming up with their own value-added implementations of CORBA. This means that interoperability between different CORBA-based systems is by no means a given; application vendors such as OpenVision will have to rewrite their software for each new management platform.

This sounds like *deja vu* all over again to me. On the other hand, a partial or semistandard is better than no standard at all.

Horwitt is Computerworld's senior editor, networking.

Raxco aims at NetView

Raxco, Inc., a Rockville, Md., systems management provider, announced that it is shipping its security, storage and automation applications for the IBM NetView/6000 network management platform.

Raxco's applications are meant to provide a uniform way to secure network entry, back up data and oversee operations and systems support for Unix and Digital Equipment Corp. OpenVMS systems in a distributed environment, according to the company.

It is porting three main products to NetView/6000:

- **Security management:** Applications that authenticate access rights, protect unattended workstations, monitor and detect intrusions and control dial-in access.

- **Storage management:** Software that archives and retrieves files and runs backup and restore operations.

- **Automated operations:** Automates problem management, job scheduling, network print management and usage monitoring.

Porting the Raxco applications to NetView/6000 will allow users to manage the Unix and OpenVMS systems in a system integrated with network and PC LAN management, according to Raxco. — *Lynda Radosevich*

ALL-IN-1 Workgroup Seminars Coming to a City Near You

Whether you're already an ALL-IN-1 customer and/or you're interested in understanding Digital's overall workgroup strategy, we've scheduled separate half-day seminars that you won't want to miss. See the listing below for the date and location most convenient for you.

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The afternoon session, "Implementing Open Client/Server Solutions for Workgroups," will focus on the latest advances in client/server workgroup computing and explore the advantages it can bring to your company. This seminar will feature in-depth demonstrations of Digital's LinkWorks product — a new client/server solution for sharing information among workgroups.

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Digital has found a way to fit 12 months of toll-free telephone support for more than 450 multivendor desktop software applications from Lotus, Microsoft, Borland, WordPerfect, Symantec, and many others into one box — Service-in-a-BOX.

This new offering simplifies support for PC Windows/DOS and Macintosh users by providing a single point of contact for a full spectrum of software-related questions, 24 hours a day, 7 days a week.

Businesses already are giving it rave reviews. "I purchased Service-in-a-BOX because I think it is a very cost-effective insurance policy," said Jerry Lee, president of WBEB FM radio station in Philadelphia. "You never know when you'll have a problem, but sooner or later you will, and it isn't always at the most appropriate time. With one toll-free call, I can talk to specialists who can solve almost any software problem."

The Inside Story

Service-in-a-BOX contains a membership card for accessing toll-free telephone support and an electronic bulletin board for additional information on products and product resolution summaries.

In addition to software support services, the product includes a directory of 150 Digital SERVICenters for hardware problems and a \$25 coupon for a fixed labor price on hardware repairs at these SERVICenters. And you get it all at an introductory price of just \$99 (retail price is \$149). This special offer — great news for small businesses and home office users — is valid through April 30, 1994.

CALL
1-800-722-9332
and reference BMW.

Digital's Forte?

Helping You Build Client/Server Applications Quickly and Easily

Maintaining your competitive advantage means introducing valuable new products and services, decreasing time-to-market, enhancing productivity, and improving your company's bottom line. That's why it's so important that your technology is optimized to help you reach your goals.

Not only must your critical applications be built rapidly, but they also must support growing levels of functionality, scalability, and flexibility. They must not only utilize previously installed hardware and software products, but also interoperate with separately developed applications. And finally, they

must incorporate the flexibility and cost-effectiveness of client/server computing demanded by more and more businesses.

Giving you a new and powerful tool-set for building client/server applications is our forte. In fact, that's exactly what we call it. Forté software, developed by Digital and Forté Software, Inc., is a breakthrough software product for developing, deploying, and managing mission-critical client/server applications. What's more, Forté software gives you independence from your computing environment by transparently supporting multiple hardware/operating system platforms, networks, graphical user interfaces (GUIs), and database management systems. The advantage? You can now mix-and-match these components without having to alter Forté application programs.

And the list of Forté advantages continues. This unique software product:

- Insulates the logical application definition from runtime computing environment details — simplifying development and promoting portability.

- Facilitates data integration and interoperability with other applications through open interfaces.
- Automates multiple strategies for optimizing application reliability and performance for mission-critical applications.

In addition, Forté software generates sophisticated client/server applications where the application logic may run on multiple clients and multiple servers, utilizing a variety of middleware.

And Forté is integrated with other Digital leadership frameworks for open client/server computing, including DB Integrator, ObjectBroker, and PATHWORKS products. These applications, data, and network integration products work with Forté to help reduce computing gridlock and allow you to use computing resources to greater competitive advantage.

For your **FREE**
Forté customer information kit,
CALL 1-800 DIGITAL
(1-800-344-4825) and reference BWJ.

FREE

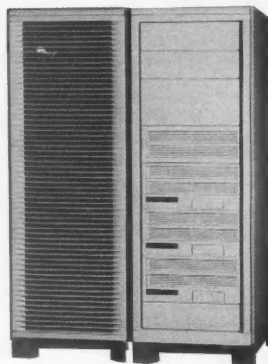
Add Power to Your Computing Environment

Compete and Win with Digital's Cluster Parallel System

Today's approach to high-performance computing begins with high-performance processors that work together. And what better team to assemble than Digital's family of Alpha AXP microprocessors.

What name have we given to this revolutionary computing team of systems? Digital's Cluster Parallel System — combining the speed of Alpha AXP processors with the performance and cost-effective packaging pioneered in workstations. The result is a high-performance, cost-effective, modular, highly scalable computing environment.

You can begin with a small or a large system — and easily add to it as your business requirements grow. To add the latest processor or other technology, you simply add the newest and most powerful devices as they become



available. There is no limit to your growth. You can create a system with hundreds of processors. And, unlike with traditional symmetric multiprocessors, you don't have to worry about replacing existing hardware.

Whether you purchase a large server, add compute power to existing workstations, or downsize an existing mainframe, Digital's Cluster Parallel System provides smooth integration with the systems you have today — plus 21st century computing capabilities to enhance your competitive advantage tomorrow.

CALL 1-800 DIGITAL
(1-800-344-4825) and reference BSL.

Seminars Show How to Build Client/Server Solutions

If your company is moving toward client/server computing and information management systems, you can see some of the best examples of open solutions at complimentary seminars sponsored by Digital. Find out how to identify major styles of client/server implementation and choose the approach that is most appropriate for your company.

These informative, fast-paced programs will discuss the benefits of client/server computing and show you how new development tools can help to speed deployment of mission-critical applications. You'll save time and money by condensing days of client/server research into a few hours.

Choose between two areas of emphasis. Our seminar, "Building Open Client/Server Solutions," focuses on showing how to decrease IS costs by taking advantage of smaller, more powerful systems available from Digital and other vendors. This seminar investigates client/server solutions that will integrate legacy application and database investments and explores multimedia and object-oriented technologies. A second program, "Migrating Systems

to Client/Server," presents several approaches to building, managing, and sharing information within client/server environments. This program will spotlight information management solutions — such as Digital's new DB Integrator — that are key to remaining competitive.

To reserve your seat at one of these **FREE** seminars, call Jill London at **1-800-457-8211**

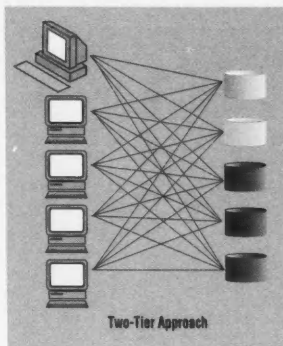
Free seminars will be held in:

LOCATION	DATE
Denver, CO	March 23
Chicago, IL	March 31
Philadelphia, PA	April 6
Raleigh-Durham, NC	April 12
Boston, MA	April 21
Indianapolis, IN	April 28
Rochester, NY	May 4
Atlanta, GA	May 10
New York, NY	May 12
Seattle, WA	May 17
Portland, OR	May 19

digital

Data Integration Made Easy

Digital's Three-Tier Framework for Data Integration Offers Your Business Performance, Flexibility, and Investment Protection



To find out if your client/server data access implementation is running out of steam, ask yourself a few questions.

Are you having trouble getting to all the data you need in your enterprise? Is it a major headache to manage your installation each time new clients are added or data sources are modified? Is it too complicated or too slow to access data in different databases with different names, data types, or data formats?

If you said yes to any or all of these questions, Digital can help. Our data integration framework enables, simplifies, and accelerates access to enterprise-wide data. To keep your business competitive, you need:

- Easy, intuitive, dynamic access from popular desktop tools
- Protection of your existing investments in hardware, software, and training
- High-performing, flexible access to distributed data anywhere on the network.

The two-tier, point-to-point approach to data integration — whereby your front-end desktop device carries all the information needed to access your back-end database system — is fine when the system is stable and when only a few devices connect to one or two databases. In the real world of business, however, computing environments are oftentimes more complex and challenged by constant change.

Within a two-tier approach, your PC, Macintosh, or workstation must handle the tool or application, application programming interface (API), network transport, and translation protocols for

each database to which it connects. All this work on the front end may mean slower system performance and a reduced rate of productivity. Plus, adding a new desktop device or database to this two-tier arrangement can cause major headaches for your IS manager.

Three-Tier Approach Optimizes Your Computing Environment

Digital's three-tier approach to data integration follows the lead of industry analysts who recommend use of a "middleware" server or "multidatabase manager" to help businesses control, manage, and optimize broad access to heterogeneous data. The benefits? Take a look.

▪ Better System Performance

Software running on this middleware tier provides centralized translation, optimization, transparency, and global cataloging of data. This means much of the burden is off-loaded from your desktop devices, allowing for faster, better front-end system and back-end database performance.

▪ Flexibility

Should you need to add desktop devices or databases to your computing configuration, you can do it with ease. Within a three-tier approach, you can start small and grow as needed. From simple data access and data warehousing to distributed homogeneous or heterogeneous data access or integration, Digital software sitting on this middle tier handles it all with ease.

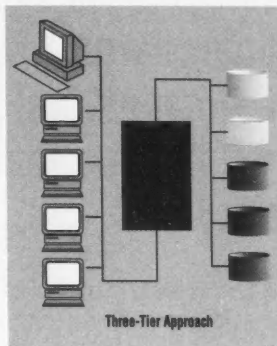
▪ Investment Protection

This three-tier approach to data access and integration complements your favorite front-end tools and applications. No need to reinvest in new hardware, software, and training. Digital allows you to use what you already have — we simply make it work better.

Software That Re-energizes Your Client/Server Implementation

Digital's ACCESSWORKS DB Integrator middleware is at the heart of our three-tier approach to data access and integration.

This family of software products, consisting of DB Integrator, DB Integrator



Gateways, and Data Distributor, provides access and integration from a wide variety of front-end systems (Microsoft Windows, MS-DOS, Apple Macintosh, Sun, OS/2, ULTRIX, OpenVMS VAX, OpenVMS AXP, and soon OSF/1 AXP, Windows NT Intel, and Windows NT AXP) to a wide variety of SQL and non-SQL databases (DB2, Rdb, ORACLE, RMS, DEC DBMS, Digital Standard M, SYBASE, and proprietary databases through the use of our Custom Drivers Gateway). And it does so over a variety of networks, including Novell, AppleTalk, TCP/IP, and DECnet.

Our data integration framework enables, simplifies, and accelerates access to enterprise-wide data.

Taken together, the ACCESSWORKS DB Integrator software family will enable, simplify, and accelerate your client/server implementations — allowing easy, cost-effective, transparent user access to your company's information.

For more information,
or to find out about a FREE loan of
product offer on Digital's ACCESSWORKS
DB Integrator software family,
CALL 1-800 DIGITAL
(1-800-344-4825) and reference BWL.

DB Integrator Software Family Up Close

Digital's ACCESSWORKS DB Integrator solution gives you the flexibility to sit at the desktop of your choice, using SQL-based tools and applications, and enjoy full access to data stored in almost any corporate database, on a wide variety of hardware platforms, in any networked location. This software family is available as part of the ACCESSWORKS integrated server solution, or as individual layered software products.

DB Integrator

DB Integrator provides transparent, high-performance integration of data from multiple databases. This multidatabase manager makes it possible to neutralize the differences in format across databases, such as naming, data type, and cross-database operational complexity. The result? You can receive views of business information — tailored to meet your specific business needs — as if they were tables in a single local database.

DB Integrator Gateways

DB Integrator Gateways provide automatic read/write access to relational and non-relational databases from a single interface, through APIs such as Microsoft's ODBC. Access is transparent. You don't need to know the location of the data sought or the type of data manager involved.

Data Distributor

Data Distributor allows you to distribute data from a source database to various target databases, or to combine data from remote sites into a centrally located database. These transfers can be automatic as scheduled or ad hoc. When used with DB Integrator, Data Distributor lets you select, modify, and summarize data from multiple databases into a more usable format during the extraction or replication process.

Attend a free seminar on using Digital's ACCESSWORKS DB Integrator framework and other client/server products. (See seminar details on opposite page.)

News Notes

Now on the Internet: Electronic Purchasing

A wide range of Digital information and services is available free of charge on the Internet. Information, including data sheets, technical overviews, performance and benchmark data, product descriptions, white papers, brochures, Digital's *Customer Update*, and the full *Systems and Options Catalog* can be found in Digital's product archives at gatekeeper.dec.com/pub/Digital/info. The index will direct you to product information. This information is also available through a Worldwide Web server at URL <http://www.dec.com/info.html>.

Via Digital's new Internet Electronic Connection on the Internet, you can access Digital's complete, one-stop shopping news, product information, and order support system (ordering support currently in the U.S. only). Simply telnet to orders.sales.digital.com (Internet address 192.208.36.1). If you don't have an account, select option #2. For more detailed instructions and descriptions of additional Internet-based services, send mail to info@digital.com.

Test Drive an Alpha AXP System on the Internet

A DEC 4000 AXP system running the DEC OSF/1 UNIX operating system is now available on the Internet. This system will enable users to evaluate the Alpha AXP architecture and test the functionality of the supporting operating systems, compilers, tools, and utilities. It runs Version 1.3 of the DEC OSF/1 operating system and new versions of compilers and layered software. In addition, a similar system running the OpenVMS AXP operating system is available for a test drive. To evaluate a DEC OSF/1 AXP system, telnet or rlogin to: axposf.pa.dec.com. To evaluate an OpenVMS system, telnet or rlogin to: axpvms.pa.dec.com. For either system, the user name is `axpguest`. No password is required.

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Update

MARCH 1994

Supercharge Pharmaceutical R&D Applications Today

With the Power of Alpha AXP Technology

Fastest time-to-information. Fastest time-to-drug discovery. Fastest time-to-market. Fastest time-to-profit. If you're in the business of research and development — within the pharmaceutical or biotechnology industries among others — you know how these time-critical factors impact your business, your customers, and your success. Digital knows, too. That's why we're partnering with a number of strategic software vendors who have the industry-leading applications you need to enhance and accelerate all aspects of the R&D process. We've also got the best computing platform — the Alpha AXP platform — on which to run them for optimal results. Ultimately, your business reaps the benefits of this dynamic fast-forwarding combination.

Alpha AXP technology offers companies like yours the ability to supercharge your research and development organization by providing revolutionary levels of performance in the areas of Laboratory Information Management Systems (LIMS), Computer-Aided Molecular Design (CAMD), computational chemistry, statistical data analysis/clinical data management, robotic systems management, chromatography data systems, document management/imaging, database technology, as well as workflow. In short, the Alpha AXP platform can run your applications faster and at better price/performance than any other platform in the industry.

Digital's Universal Platform Takes You into the Future

Designed to run multiple operating systems — OpenVMS, OSF/1, Windows NT, or others that may be developed in the future — the Alpha AXP platform has built-in scalability that will serve to accommodate a wide range of computing technology, from palmtops to supercomputers.

What's more, Alpha AXP technology has been designed to deliver solutions that will extend across successive generations — *future-proofing* your investment well into the 21st century.

Partner Preview

Digital's Alpha AXP solutions portfolio continues to grow as an increasing number of our business partners take advantage of the power and performance of the Alpha AXP platform.



The Alpha AXP platform can run your applications faster and at better price/performance than any other platform in the industry.

Those Digital partners offering applications on the Alpha AXP platform that are particularly well suited for pharmaceutical/biotechnical R&D include:

- Beckman Instruments, Inc.
- BBN Software Products Corporation
- Cambridge Scientific Computing, Inc.
- Chemical Design, Ltd.
- Hypercube, Inc.
- Informix Software, Inc.
- MDL Information Systems, Inc.
- Oracle Corporation
- Recognition International, Inc.
- Scitec International
- Fisons Instruments, Inc.
- Information Dimensions, Inc.
- Interleaf, Inc.
- Molecular Simulations, Inc.
- The Perkin-Elmer Corp.
- SAS Institute, Inc.
- Verity, Inc.

Our extensive portfolio of offerings on the Alpha AXP platform from these prominent suppliers gives you the freedom to select the best solutions for your pharmaceutical/biotechnical R&D computing environment.

For more information or for your complimentary demo video of selected Digital pharmaceutical R&D applications,

CALL 1-800 DIGITAL
(1-800-344-4825) and reference BWF.

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Wireless communication

PDA's to assist doctors, pharmacies

By Lynda Radosevich

Today, 7% to 10% of all hospitalizations for people under the age of 65 occur when a patient takes a drug that exacerbates an underlying medical condition. This figure increases to 14% for people over the age of 65, according to Kimberly Babb, a consultant at Towers Perrin, an employee benefits consulting firm in Houston.

To help reduce those medication-induced illnesses and shave costs on prescription medicines, one major health care provider is turning to the latest in personal digital assistant (PDA) and wireless two-way messaging technology.

Value Health, Inc., a managed care provider for Ford Motor Corp., plans to use Motorola, Inc.'s newly introduced Envoy personal communicator [CW, March 14] and a wireless messaging service from Med-E-Mail Corp. in Tarrytown, N.Y., to link doctors in the field to patient pharmaceutical information stored in a central Value Health data bank.

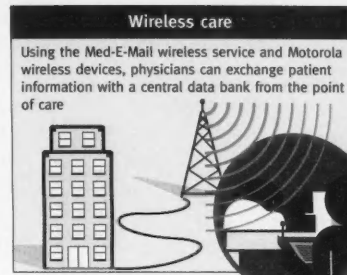
As a result, Value Health hopes doctors will make more informed prescription decisions at the point of care and choose from a list of the health plan's discounted medications.

Prescription replacement

"We're moving the communications earlier in the food chain by allowing Value Health to communicate with the physician at the point of dispensing," said Steven Shulman, executive vice president at Value Health in Avon, Conn. Such a move can improve patient care and reduce costs by replacing an inefficient pre-

scription system, he said.

Under the current system, a physician writes a prescription and gives it to a pa-



tient. The patient takes it to a pharmacy where a pharmacist enters it into the system and checks for consistency. By giving doctors PDAs, Value Health can immediately check the prescription

against the patient's records to determine if there is a therapeutic conflict. Also, the doctor can access the formulary, a preferred list of bulk-purchased drug products, thereby saving money, Shulman said.

"Because of the lack of an integrated medical record, the physician doesn't have access to all of the patient's medical information. At a minimum, we can act as a central repository for all of a patient's pharmaceutical information," Shulman said.

"With the onset of PDAs and physicians becoming more computer literate, you're looking at changing their routine practice," Babb said.

Although final arrangements with Ford are continuing, Shulman said he expects to pilot the system this summer and roll it out this year to the major physi-

cians who service Ford employees.

While PDAs have yet to spark widespread horizontal business applications, medical industry vertical applications like this one are likely to drive demand for a while, analysts said.

"Health care has been one of the targeted areas for these mobile devices because of the efforts there in cost containment," said Bill Lempesis, principal at Lempesis Research, a technology consultancy in Pleasanton, Calif. "There is pretty fertile ground there for Newtons and Envoy's and all sorts of handheld devices."

For instance, Pi Systems Corp. in Portland, Ore., has clients in the home health industry that use pen-based tablets and wireless networks to transmit information, Lempesis said.

Awaiting Envoy's arrival

Value Health's project depends on Motorola's timely rollout of Envoy, which is currently shipping to beta sites and should be widely available this summer. Devices such as notebook computers and Apple Computer, Inc.'s Newton do not fit the bill, according to Med-E-Mail President Steven Hochberg.

"Our theory is that physicians don't use keyboards and that Envoy is the type of device that will fit into physicians' workflow," Hochberg said. The Newton is lacking some technical features, such as built-in, two-way communications, Hochberg said.

At roughly \$1,500, Envoy's list price is high. But unlike Newton, it has wireless capabilities built-in, and "in health care, they are used to buying expensive gadgets," Lempesis said.

Mail and pen, together again

RadioMail Corp. in San Mateo, Calif., said software that enables its wireless, two-way electronic-mail service is shipping on the Motorola Envoy personal communicator.

Envoy, a pen-based, handheld device with a built-in wireless packet modem, will ship this summer. The RadioMail service lets users send and receive messages over the Ardis wireless data communication network. Messages travel over RAM to the Ra-

dioMail site. From there, RadioMail translates the messages to and from the recipient's format and forwards them to the Internet and other public and commercial mail systems.

RadioMail also said its wireless E-mail service will work with Apple's Newton beginning in April.

Separately, Motorola said Envoy will also ship with the AT&T PersonalLink wireless service.

— Lynda Radosevich

Prudential

CONTINUED FROM PAGE 69

are positioning ourselves for any outcome in the health care reform," Garling said.

Indeed, health care industry analysts said Prudential is among the first of the nation's top health care providers to ready itself for changes in the managed care delivery system. "The big players will be managing these networks, and the information systems behind them will be the key," noted Philip Lawrence, a vice president at CSC Index, Inc. in Cambridge, Mass. Lawrence said other industry players that have implemented similar networking schemes include Harvard Community Healthplan, Aetna Life & Casualty Co. and Computer Sciences Corp. health care affiliates.

Change in one form or another

But even if the Clinton health care plan fails, Lawrence and other analysts expect at least one trend to emerge: The health care industry will undergo a shakeout and will be reduced to a smaller number of large providers that offer electronic connections between member facilities on a regional basis.

"The effectiveness of telecommunications and information management will be key to the success of these systems," said Don Thieme, a partner in Ernst & Young's New England Health Care Practice in Boston.

Briefs

TCP/IP to run on NetWare

Novell, Inc.'s NetWare/IP will run on FTP Software, Inc.'s TCP/IP transport stack, the companies announced last week. Until now, NetWare/IP, which enables clients to access NetWare services via TCP/IP, ran only on Novell's version of the networking standard.

3Com to ship FDDI link

3Com Corp. in Santa Clara, Calif., said it will ship this fall an Ethernet/Fiber Distributed Data Interface (FDDI) switch and an FDDI concentrator for its LinkBuilder MSH line of intelligent hubs. The concentrator supports two FDDI workgroups of up to 54 users over unshielded twisted-pair and fiber cable for \$725 per port. The switch will offer 1,024 addresses and provide LAN switching to FDDI for \$850 per port.

High-speed agreement

Wellfleet Communications, Inc. and Fujitsu Network Transmission Systems have agreed to jointly develop a high-speed internetworking

package that will integrate the companies' respective routing, switching and Synchronous Optical Network technologies, also known as Sonet.

Network monitor stacks up

Racal Interlan announced a family of Simple Network Management Protocol-manageable stackable hubs. Available in 17- and 33-port configurations with a maximum density of 96 managed ports, the hubs feature network monitoring software that alerts service providers and network managers when something goes wrong with a client's network. According to Racal Interlan, a 96-port configuration costs \$67 per port.

Alantec adds to PowerHub

Alantec Corp. added the following capabilities to its PowerHub family of switching hubs: IPX and AppleTalk virtual LAN capabilities; an Internet Protocol helper function for forwarding nonroutable TCP/IP protocols; and the ability to reboot hubs located at remote locations over the network. Alantec also reduced the price of its high-end PowerHub Model 5000 from \$27,950 to \$22,500.

Computer viruses. Perhaps the most misunderstood computer security issue in America today.

Throughout the mid-80s and early 90s, the computer and business press were filled with horror stories about viruses and the dreaded possibility that one day a "killer virus" would bring America's critical computer networks crashing down.

The fear rose and escalated until it peaked with the announcement that the Michelangelo virus would race across America's networks overwriting hundreds of thousands of hard drives.

Then, nothing happened.

Michelangelo turned up on the national news but just about nowhere else. People began to dismiss viruses as hype. The media and MIS turned their attention to other issues.

But while the "killer virus" may be a myth, the virus danger is not.

Despite their dark, Doomsday mythology, virus attacks are most likely to be small-scale, discrete



Whether you add it up in dollars, time or corporate data, our enterprise-wide antivirus solution means dramatic savings for your business. Savings you can add directly to your bottom line.

enterprise-wide solution to the problems of computer contamination.

It includes Norton AntiVirus® for NetWare™ (NAV-NLM) to protect all of your network servers.

Norton AntiVirus® (NAV) 3.0 for all of your DOS and Windows machines. And Symantec AntiVirus for Macintosh™ (SAM) 3.5.

SATAN'S BUG. THE RISK. AN MIS DIRECTOR'S GUIDE



Like so many of today's realities, the concept of self-replicating software was first seen in science fiction. Today, viruses like Predator, Invader and Frodo abound, but they're not fiction.

infections that on the surface merely disrupt operations.

But even if these attacks don't result in major data loss and dramatic headlines, they eat time and money as your computers and users sit idly by while you identify, isolate and eradicate the infections.

The cost to your enterprise can be staggering. And the likelihood that you could fall victim to this evil fate is increasing every day.

AN ENTERPRISE-WIDE SOLUTION FOR VIRUS CONTROL.

At Symantec, we understand the dangers posed by viruses better than anyone in the industry.

After all, our Norton AntiVirus products have been the desktop standard for the prevention and eradication of viruses for years.

Today, we offer you a complete,

Together, they offer MIS the most complete and comprehensive enterprise-wide antivirus solution available anywhere.

CENTRALLY DISTRIBUTED DESKTOP PROTECTION.

NAV 3.0 delivers exceptionally fast virus scanning with superior protection and repair for all your DOS and Windows machines. NAV detects thousands of viruses – and even locates unknown strains.

Peter Norton pioneered desktop antivirus protection in the 80s. Now we're bringing that same quality of antivirus expertise across your entire enterprise.



SAM similarly protects your Mac users from any known or unknown viruses. And it's the only antivirus

Symantec, Norton AntiVirus, Norton AntiVirus for NetWare, Symantec AntiVirus for Macintosh and Norton Administrator for Networks are

protection that scans compressed Macintosh files in both System 6 & 7.

Both NAV 3.0 and SAM are now available with their own software distribution tools, so you can distribute them across your network from one workstation. You can use these same tools to distribute our monthly virus updates containing new computer virus signatures.

CENTRALLY CONTROLLED SERVER PROTECTION.

NAV-NLM thoroughly scans all DOS, Windows and Mac files on

Best of all, NAV-NLM is a Norton Network Series product. So it automatically plugs into Norton Administrator for Networks™ (NAN) as an integral part of a completely centralized end-user

Polymorphic and heavily encrypted, the Satan Bug acts like a chameleon, mutating and changing its appearance on each system or file server it infects. Once this lethal virus infects a network, it allows users to login just once, then it locks them out. These dangerous new polymorphic virus strains are getting more prevalent every day.

resource management strategy for your company.

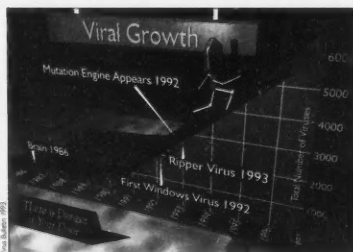


PPER. THE PREDATOR. E TO THE FORCES OF EVIL.

your servers for any viral activity whatsoever – even for new stealth and polymorphic engine strains. A virus can change its code, but it can't hide from NAV-NLM.

When viral activity is detected,

With the advent of menu-driven, virus construction kits being widely distributed on the underground BBS, viruses are now a mass produced commodity. A fact that has truly frightening implications for your company.



NAV-NLM removes the infected file and prevents any damage before the virus can complete its destructive task.

NAV-NLM can be configured on all your servers from one central location, either individually or as a group. You can define how frequently the files on the server are scanned, how MIS is notified when a virus is found, and what action should be taken when one is detected.

THE NORTON NETWORK SERIES.

Norton Network Series products are designed to work together to help you manage all of your end-user resources centrally, from one console on your desktop.

Today, they share a central console with a single user interface. Tomorrow, they will share data between their applications.

So an antivirus intervention can automatically trigger a backup file restoration to the affected site.

A new software upgrade can automatically trigger an updated company-wide inventory report.

License metering on one LAN can trigger metering on another LAN. Whether it's in the same building or in another city.

The Norton Network Series will

help you manage all of your end-user resources more effectively.

So you can focus on building a reliable, responsive, information-rich network that will make your company ever more competitive.

Find out more. Phone us and request our Symantec White Paper on Enterprise-Wide AntiVirus Protection. It's the best antivirus guide available. So send for your free copy now.

Because while you've been reading this, someone else has been up to something evil.

CALL 1-800-453-1135.

Ask for Ext. 9B12 and request our White Paper: *The Truth About Virus Outbreaks In A Networked Environment.*

Paper available in U.S. only.
For more information in Canada, call 1-800-667-8661.



SYMANTEC.
MANAGING THE ENTERPRISE.

Enterprise Networking

Extended Systems, Inc. has introduced ExtendNet MPX ESI-2820A, a Token Ring print server.

According to the Boise, Idaho, company, the product provides printing from up to four protocols simultaneously and transfers jobs 10 to 30 times faster than traditional PC-based print servers.

The product uses flash memory for easy upgrades and incorporates advanced software utilities for centralized control.

The ExtendNet MPX ESI-2820A costs \$895.

► **Extended Systems**
(208) 322-7575

Rasmussen Software, Inc. has announced AnzioSoc, a product providing TCP/IP connectivity for AnzioWin, its ter-

minal super-emulation and file transfer product created for users connecting PCs to host systems that run Unix or proprietary operating systems.

According to the Portland, Ore., company, AnzioWin operates under Windows and features sizable fonts, intelligent pass-through print, color support, macro keys and flexible function key support.

The TCP/IP connectivity capability is in the form of support for the Windows

Sockets standard for communication between third-party applications and TCP/IP providers.

A single unit of AnzioSoc costs \$299.

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Paralon Technologies has introduced PathKey, a security device that attaches to computers, workstations and modems for use in serial data communications and dial-up network connections.

According to the Bellevue, Wash., company, PathKey controls access to computers with an authorization process and automatically encrypts data sent between two PathKey-equipped computers using the Data Encryption Standard.

PathKey costs \$285 per unit.

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Product shorts

Apexx Technology, Inc. has announced PCTalk adapter, a product designed to connect IBM-compatible PCs to Macintosh computers and shared printers on a workgroup network. The product supports Farallon Computing, Inc.'s Timbuktu for Windows and PhoneNet PC software. Together, the PCTalk adapter and Farallon software enable users to connect to any Apple Computer, Inc. AppleShare server or Macintosh System 7 to share files and data using the chooser interface in both Windows and DOS. Cost: \$199. Apexx Technology, Boise, Idaho. (208) 336-9400. ... **Systems Strategies, Inc.** and **Aurora Technologies, Inc.** have introduced Express for Solaris 2.2/2.3, a high-speed connectivity product that allows Sun Microsystems, Inc.'s Solaris 2.2/2.3 users to communicate with IBM mainframes and AS/400s over Token Ring. Features for Express for Solaris 2.2/2.3 include terminal emulation, file transfer, printer sharing and application programming interfaces for Sun's SPARC workstations and servers and most SPARC-compatible systems. Cost: ranges from \$1,000 and \$12,000. Systems Strategies, New York, N.Y. (212) 279-8400. ... **Biscom, Inc.** has introduced Faxcom for VAX, a client/server technology designed for Digital Equipment Corp.'s VAX and AXP servers. The application allows Windows running under the Pathworks network protocol to send and receive fax transmissions electronically. Cost: starts at \$5,995 for a basic, single channel. Biscom, Chelmsford, Mass. (508) 250-1800.

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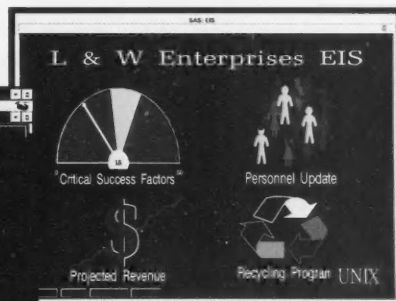
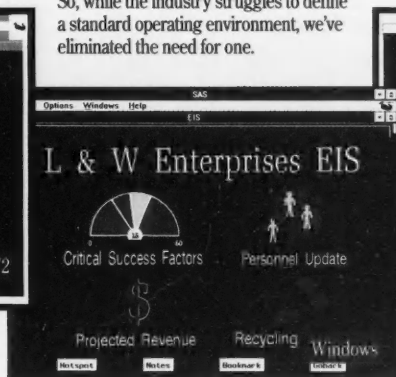
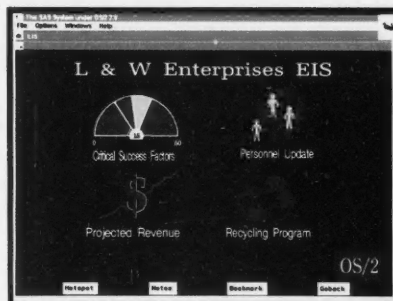
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For your copy of the complete PC Magazine article, including test results call 1-800-633-1071 Ext.8129.

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Large Systems

IBM tries to keep IMS vibrant

By Craig Stedman

■ In an effort to convince customers that its 26-year-old IMS hierarchical database and transaction manager still has a place in the client/server world, IBM will soon detail plans for supporting non-SNA networking such as TCP/IP and remote procedure calls (RPC) in the next IMS release.

IBM will also disclose its intention to build object-oriented capabilities into IMS, company officials said. That will start with support for writing IMS applications with IBM's Smalltalk-based VisualAge fourth-generation language; it will eventually expand to include the company's System Object Model/Distributed System Object Model tool kits as they become available on MVS.

In addition, IBM is promising shorter gaps of 18 to 24 months between IMS releases after taking three years to develop the current Version 4.1, which shipped last May. Product manager Patt Romero Cronin acknowledged that the long wait "caused a lot of concern" about IBM's commitment to the product. "A lot of customers started questioning whether IMS was dead," she said.

IMS Version 5.1, which will include the non-SNA networking support and other new features, is scheduled to ship in August, with general availability expected six months later, Cronin said.

Industry analysts said making IMS data accessible to desktop users via TCP/IP or the Open Software Foundation's Distributed Computing Environment (DCE) RPC is a key part of IBM's effort to keep the IMS installed base in the fold.

"As long as you're supporting only SNA, you're not really opening up," said Shaku Atre, president of Atre and Associates, Inc., a consultancy in Port Chester, N.Y.

Richard Finkelstein, president of Chicago consultan-

cy Performance Computing, Inc., noted that SNA programming is "extraordinarily expensive." Providing more open access to IMS should make it easier to tie the database into client/server installations, he said.

New IMS business is limited, analysts said; International Data Corp. forecasts a 3% average annual decline in the number of licenses installed worldwide (see chart). But most large users are not perceived to be in any hurry to move IMS applications to more modern relational databases.

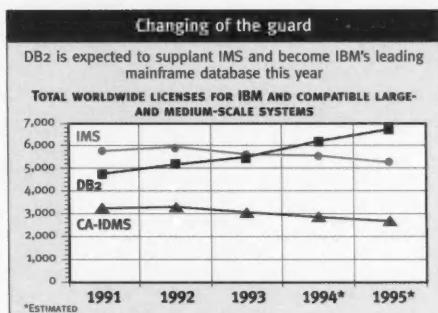
Going nowhere yet

An information systems executive at a large Midwestern insurance firm said the firm is not doing any new development for IMS. "On the other hand, [IMS is] stable and mature, and it holds a rather marked [performance] advantage over relational databases for operational systems," he said. "We've got legacy [IMS] applications that will be around for quite a while."

The insurance company is looking to move its home and auto policy writing systems off IMS as part of a business plan for offering combined policies, but that could take three years to complete, the executive said. Its commercial insurance applications "aren't going anywhere," he said. IBM's plan to add support for TCP/IP and

DCE's RPC in IMS 5.1 could help extend the usefulness of the database and "is definitely something we'll have a look at," the executive said. He indicated that there is "a far better than 50-50 shot" that the insurance company will upgrade when the release ships.

Pfizer, Inc. in New York plans to move its order entry, pharmaceutical distribution and financial applications off IMS in 1995 or 1996, "but I don't think it has anything to do with IMS," said Jim McDermott, Pfizer's IMS database administrator. "They're just downsizing here and want to put things on AS/400s."



Although Pfizer has almost a dozen separate IMS databases, its transaction load is not heavy enough to make the performance benefits that IMS provides at high volumes that big of a factor, McDermott said. "We're not doing hundreds of thousands of transactions a day like a bank would," he noted.

"IMS is in a state of consolidation, and I don't see any new development happening whatsoever" at user sites, said Nagraj Alur, a principal at Database Associates International in Morgan Hill, Calif. "But I don't see it coming out of large shops, unless they didn't need a mainframe in the first place."

In addition to generally outperforming IBM's DB2 and other relational databases in applications involving simple, high-volume transactions, IMS usually has a lower cost per transaction, Alur said.

Finkelstein said users with mission-critical applications running smoothly with IMS are cautious about re-writing them to another database. "While a migration may be going on, it's a slow migration," he said.

Parallel developments

IBM's development plans for IMS Version 5.1 will be announced as part of a wide-ranging mainframe rollout scheduled for April 6. That will feature the company's first System/390 parallel processors based on CMOS technology [CW, Feb. 28].

One of those parallel machines will be a database query engine initially targeted at IMS applications. Version 5.1 of the database is scheduled to include capabilities for allowing data to be accessed concurrently by up to 32 system images, said IMS product manager Patt Romero Cronin.

The data-sharing support will be provided for applications using both the IMS database and transaction manager modules and for applications that implement IBM's CICS transaction management software as a front end into the IMS database, Cronin said.

IMS 5.1 will also support a new MVS Workload Manager that monitors system resources and, if necessary, adjusts them to meet response-time goals, Cronin said. Another added feature will be remote-site recovery, which enables a remote system to take over the IMS work load if the host machine goes down. —Craig Stedman

UK Royal Automobile Club makes outsourcing switch

By Mark Halper

Martin Gleave, computer services manager for the UK's Royal Automobile Club, was giving some long thought to changing outsourcers when his incumbent supplier, Electronic Data Systems Corp., helped him make up his mind.

EDS' decision last year to relocate the club's processing from its Milton Keynes site in central England to a center near London's Heathrow Airport provided the impetus for Gleave to start looking for another outsourcing arrangement.

"EDS was consolidating a number of data centers, and they wanted to close our center," Gleave recalled. "They

wanted to stop the existing contract, which effectively gave us the opportunity to look elsewhere."

The result: The auto club issued invitations to tender, the British equivalent of requests for proposals, to EDS, IBM, SHL Systemhouse, Inc. and others.

By September of last year it had signed SHL Systemhouse to a three-year, \$3 million deal to provide mainframe processing for rescue operations for 5.7 million members in the UK and insurance operations for 300,000 club policy holders. About 1,200 dispatchers and claims administrators access a CICS database from terminals and PCs running

3270 emulation over an SNA network.

SHL Systemhouse will also assist in moves to new technologies, although neither the auto club nor SHL Systemhouse specified what those will be.

The transition from EDS to SHL Systemhouse was completed by the end of last year, said Gleave, who recalled that moving the club off its year-to-year contracts with EDS "was already on my mind" when EDS informed the club of its intentions to consolidate.

An EDS spokesman said the auto club asked for new bids because it was uncomfortable with the planned migration. He noted that the club awarded

some technology work to other vendors; BT, for instance, won the networking management portion.

Ironically, among the reasons Gleave was leaning toward leaving EDS, he said, was the outsourcer's success with larger companies. At the time of Gleave's evaluation, EDS was bidding on two megacontracts in the UK—one with British Aerospace PLC and the other with Inland Revenue. It eventually landed a preliminary agreement worth an estimated \$1.5 billion with Inland, the UK's tax agency.

"With EDS, we thought we would become a very small fish in a very large pond," Gleave said. "We wouldn't have liked that so much."

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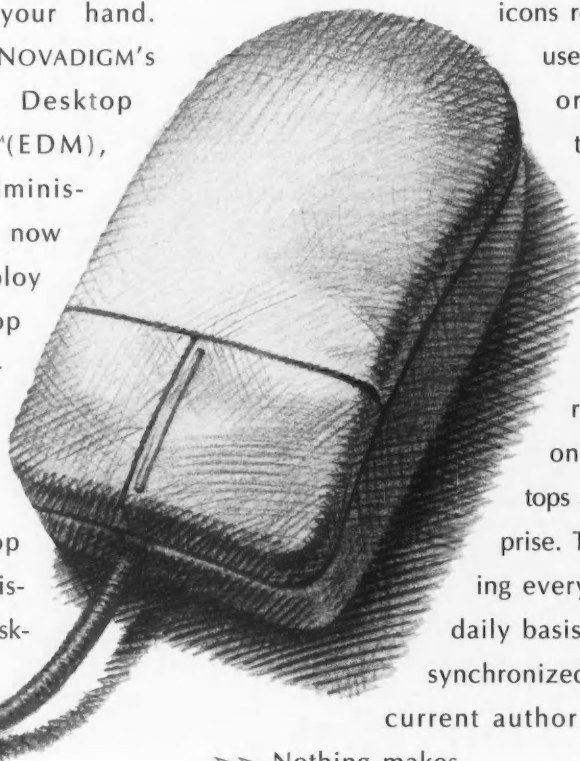
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Chemical activates Unix trading room

Bank among first to have interactive system

By Thomas Hoffman
NEW YORK

Chemical Banking Corp. may not have all the bells and whistles that other leading-edge trading room environments tout, such as desktop-to-desktop videoconferencing, but the bank's new Unix-based trading room is expected to help keep the firm and its \$150 billion in assets among the top money centers on Wall Street.

This month Chemical flipped the switch on its 440-seat trading room, which supports the bank's foreign exchange and derivatives group as well as its funding and portfolio unit.

During the first leg of the two-phase transition, the bank last month transferred 325 Chemical Securities, Inc. traders and support staffers, who are in-

involved in the exchange of government and municipal securities and corporate bonds.

Most of the major money centers, such as BankAmerica Corp. and First Chicago Corp., have either moved to or are headed for Unix-based trading environments. But Chemical ranks among the first of the major banks to make the transition from an IBM AS/400-based terminal emulation makeup to Unix and graphical user interface-based tools, said Deborah Williams, an analyst at The Tower Group, a Wellesley, Mass., banking and financial services consultancy.

\$50 million price tag?

Chemical executives declined to disclose the costs of the two-year effort. However, analysts placed the total investment in

the trading environment at \$30 million to \$50 million, including hardware, software and infrastructure.

The bank's ability to add or move workstations under the former trading environment was "restricted by our ability to move cable," said Anthony P. R. Herriott, Chemical's managing director of global bank operations and technology. He was referring to the 600 miles of coaxial cable that was routed under the raised floors to support the mainframe terminal environment.

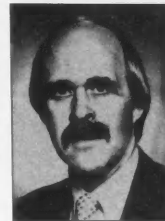
The new system replaces a stodgy, 10-year-old IBM PC terminal emulation setup. Under that system, Chemical traders were forced to view as many as nine screens for information, and their ability to manipulate data was limited, Herriott said.

"What we needed was an interactive system that could help our traders be more analytic and quantitative," he noted.

By integrating software applications, such as Lotus Development Corp.'s 1-2-3 and Reuters PLC's Triarc 2000 market data distribution system, the Chemical system will conduct automatic analysis of market data so traders will not have to key in the information and create analytical models themselves, Herriott said.

"With the system doing the comparative analyses automatically, our traders

will no longer have to look at [multiple] screens and do the interpretations themselves. Seconds are precious in this business, and we feel this can give us competitive advantage," Herriott added.



Chemical's Anthony P. R. Herriott: "What we needed was an interactive system."

Banks and money centers have lagged behind brokerages in doing comparative analyses with sophisticated software tools.

Alternative setup

Such advantages are not lost on competitors such as The Chase Manhattan Bank NA, which is readying a \$75 million, 456-seat Sun Microsystems, Inc.-based Unix trading environment for rollout later this year. Chase's New York trading room is expected to include

desktop-to-desktop videoconferencing between traders and voice-recognition software.

Chemical executives said they never gave serious consideration to desktop-to-desktop video, however, because the costs are still prohibitive and they were unable to justify the business requirements.

"We've looked at what our competitors are doing, and what we're doing is not supersonic. But we're somewhat unique in having built an open technical configuration within the last three to four years," said Brian R. Slater, managing director of Chemical's global bank technology.

Trade brigade

Chemical's bilevel trading environment consists of 400 Sun SPARCstations. They run X Window System on a Solaris 2.2 operating system and are linked over a TCP/IP network to 300 Compaq Computer Corp. PCs for common file sharing.

The Compaq PCs are attached to one another through a Novell, Inc. Net-

Ware 3.11 network operating system. Trades are routed from the desktop systems over copper and fiber connections to IBM AS/400s and Digital Equipment Corp. VAXs, where they are processed. A Fiber Distributed Data Interface backbone network is supported by Wellfleet Communications, Inc. routers and Cabletron Systems, Inc. smart hubs.

Comdisco adds office-like recovery centers

By Craig Stedman

Responding to IBM's opening of an advanced hot site outside New York City last year, disaster recovery market leader Comdisco, Inc. said it is redesigning its hot sites to provide expanded client/server recovery capabilities in more office-like settings.

Comdisco, IBM and SunGard Recovery Services, Inc. are leapfrogging one another in an attempt to realign their recovery capabilities with distributed computing environments, said Fred Joy, a senior research analyst at Meta Group, Inc. in Westport, Conn.

"They've all realized that there's more to disaster recovery than mainframes and technology," he said.

Conventional setting

The new hot sites will give departmental and client/server users a more conventional office setting to work in than the raised-floor data center at Comdisco's current facilities. "Comdisco has recognized the need to provide customers with an environment in addition to the equipment," Joy said.

In August, Comdisco plans to start operating separate recovery facilities in

the New York area for departmental minicomputers and networks based on Unix and PC servers. Those systems are currently housed with mainframes at the company's data center hot sites in North Bergen and Carlstadt, N.J.

The Unix/PC network site will include expanded recovery support for the IBM RS/6000, PC servers and Sun Microsystems, Inc.'s computers, Comdisco executives said. It will also have 400 end-user work spaces, while the minicomputer facility will house about 50 users.

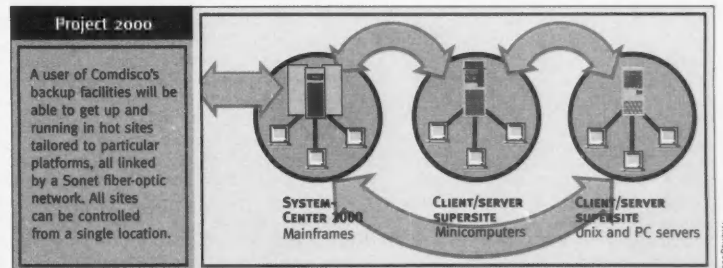
The mainframe facility and the new hot sites will be linked via a fiber-optic Synchronous Optical Network (Sonet) network (see chart) that will allow either one to control the others, said David Nolan, vice president of marketing and product management at Comdisco Disaster Recovery Services. A similar revision of the company's hot sites in Illinois and California will follow, he added.

Comdisco's plan to have separate, networked hot sites differs from IBM's approach at its new Sterling Forest, N.Y., fa-

cility, which houses all systems under a single roof. Nolan said Comdisco decided that the logistics of keeping everything in one location had become "almost impossible" due to zoning regulations and constraints on transportation, parking and hotels.

covery. Those capabilities "have always been there, but now they're trying to put them together in a way that's easier to use, and that's good," Loane said.

He added, however, that Alamo will still do client/server recovery internally while using Comdisco's facilities for its



"We didn't have the ability to deal with large masses of people," he said.

Tom Loane, vice president of computers and communications services at Alamo Rent a Car, Inc. in Fort Lauderdale, Fla., said the changes promised by Comdisco look to be a worthy repackaging of the way the Rosemont, Ill., company provides client/server and minicomputer re-

mainframes.

David Sherr, first vice president for investment banking technologies at Lehman Brothers in New York, also said he found Comdisco's approach "reasonable." But Lehman Brothers, a subsidiary of Shearson Lehman Brothers, Inc., is keeping its Unix server recovery work in-house as well, he added.

Harold Lorin

Achieving high utilization



I read with alarm about the reemerging idea of increased marginal utilization for mainframes. Achieving utilization above the 90% level accounts for one of the great costs of

owning mainframes.

The performance instability and system reliability of interactive high-utilization environments have been major reasons for movements toward distributed processing. The use of expensive labor to balance resources and tweak scheduler and buffer parameters is a "dis-economy" that becomes worse at higher utilization levels.

Large systems have complex software

environments (MVS, VTAM, TSO, JES, DB2) with overlapping and contradictory parameters. Tuning them is like adjusting a television picture with a random number generator determining what the magnitude, direction and timing of each twist of the knob might be.

Most of this activity was abandoned for standard software configurations in the mid-1980s because the labor cost of marginal utilization was viewed as greater than its economic value. In addition, mechanisms like the MVS Systems Resource Manager often use more power than they deliver.

Large-scale success

In the last decade, there has been a serious productivity gain in large-scale environments. The productivity gain is directly related to abandoning high-performance goals on interactive mainframes.

A return to intensive tuning utilization would reestablish productivity at 1978 levels, increasing the cost per user to a price above the costs now ascribed to client/server. There is a high probability that higher utilization will not be

achieved regardless of the investments made in it.

Often, over-management results in exacerbating large systems effects and decreases the number of MIPS actually available to applications. The utilization numbers rise, but resource managers are consuming the MIPS. I have done studies that suggest that the probability of sustaining 95% utilization while offering stable response time to users is less than 0.3%, regardless of how much tuning is performed. But at best, it is not worth the candle.

A better way

Assume you have a \$14 million system that has a rated speed of 200 MIPS and is depreciated over seven years. Fifty-five percent of the MIPS are directly used by applications. Assume the system runs at 75% and is

increased to 85% by intensive management.

This is an increase of about 11 MIPS. The annual value of the 11 MIPS is \$110,000 (\$2M per year for 200 MIPS, \$10,000 per MIPS). The cost to achieve this value can be \$180,000, including bur-

The real cost of near-maximum utilization is in the disruption and dissatisfaction of the end user.

densome salaries, assuming three specialists in systems performance skills in database, communications and MVS.

There are a number of ways to buy 11 MIPS for \$180,000. The path of minimum cost is to buy a smaller version of the mainframe, for example an IBM 9221, which is already on wholesome pricing curves. The cost of migration is minimal, and a much more stable user environment can be achieved. If OS/2 or Windows is already in the culture, a departmental server with a PC beats the hardware cost with less personnel cost than intensive performance nursing.

The real cost of near-maximum utilization is in the disruption and dissatisfaction of end users. Response times become unpredictable, crashes increase due to software stress and there are unexpected delays in completing batch work. Attempts to maximize utilization cost more than they are worth by every measure and lead to serious user discontent.

Literature detailing this discontent is now 25 years old and forms the basis of the success of the minicomputer and the mainframe. It is dangerous and self-defeating for mainframe advocates to propose a return to such unwholesome practices.

Lorin is an author, principal consultant at the Mantecore Consultancy in New York and a senior adjunct professor at Hofstra University.

Stratus Computer, Inc. has announced that health care software products from Shared Systems Corp. and SoftCom Systems, Inc. have been integrated into a single product called HealthLine software.

According to Stratus in Marlboro, Mass., HealthLine provides a comprehensive health care information network for insurance companies, managed care organizations and other health care participants.

The software runs on fault-tolerant Stratus Continuous Processing Systems and features software components, including HealthSwitch, a transaction network foundation; electronic claims; electronic data interchange translation; electronic benefits and managed care.

HealthLine pricing starts at \$200,000.

► **Stratus**
(508) 460-2000

Wang Laboratories, Inc. has announced Open/workflow software, work management products designed to give organizations the ability to create and manage workflow procedures.

According to the Lowell, Mass., company, users can automate, organize, manage and fully integrate work processes with PC, LAN, Unix and legacy applications.

Open/workflow features a graphical user interface, comprehensive business metrics, ease and speed of deployment and integration of powerful workflows without relying on specialized develop-

ers or scripters.

The software lets users access data to process tasks including text, graphics, image, voice and video.

Pricing start at \$7,500 and include Open/workflow graphical builder, reporting tools, integration tools and sample reports and procedures.

► **Wang**
(508) 459-5000

Cybermation, Inc. has announced ESP Workstation, a graphical user interface to Execution Scheduling Processor, Cybermation's complete job scheduling and work load management system.

According to the Markham, Ontario, company, ESP Workstation provides users with desktop scheduling for MVS work loads. Job streams are scheduled by drawing the workflow on a PC screen.

When the workflow is drawn, the product automatically generates the necessary schedule information to control the work on the mainframe.

Users can modify workflow on their PCs with a point and click of a mouse.

Pricing range from \$500 to \$1,500 per user license.

► **Cybermation**
(905) 479-4611

Isogon Corp. has introduced SoftAudit Version 3, an MVS software product that monitors an installation's use of all other software products on its systems.

According to the New York company, SoftAudit automatically recognizes thousands of IBM and non-IBM software products.

The product has the ability to locate and record load modules on each disk

drive on the system, detect all module uses and track all invocations.

Features include an export facility for use with third-party or installation-written reporting and analysis packages and the ability to specify filters to exclude or include software by product or vendor at all stages of processing.

Reports on installed products and their use are provided.

A perpetual license is priced from \$8,500 to \$36,500.

► **Isogon**
(212) 967-2424

Baber Information Services, Inc. has announced Reveal Pager/Message React, an interactive paging and message-handling utility for IBM's AS/400.

According to the Irving, Texas, company, Reveal Pager can page users by sending AS/400 messages to their numeric or alphanumeric pagers.

The product can also call the users' telephone and inform them, via a voice application, that the job ended normally.

Reveal Pager offers a message-escalation feature that automatically pages the next person in line if the first person does not answer the page within a specified period of time.

The product also has the ability to broadcast a message to several people.

Pricing range from \$995 for an AS/400 Model F02 to \$3,995 for a Model F95.

► **Baber Information Services**
(214) 650-0506

Pixel Science, Inc. has announced QuickImage 3.2 AS/400 for Windows.

According to the Great Neck, N.Y., company, QuickImage is a high-resolution vi-

sual imaging and image management software product designed to bring database and information storage capabilities to IBM's AS/400.

QuickImage features an Image Document Index Table that gives every image a comprehensive information record.

Field Search, the QuickImage Power Data Base, lets users select portions of letters or conditions of index file fields and retrieve a list of image file names.

Other features include support for most popular image formats, operation of scanner functions directly from the software, use of an unlimited number of PCs without hidden charges, and displaying or printing the entire image with the best possible fit using a true graphical user interface.

Pricing begins at \$2,700.

► **Pixel Science**
(516) 773-7377

Best Power Technology, Inc. has announced the Patriot 600VA, a power protection device.

According to the Necedah, Wis., company, the Patriot provides low-cost backup power protection for users of Unix workstations, file servers, PCs, point-of-sale devices and fax machines.

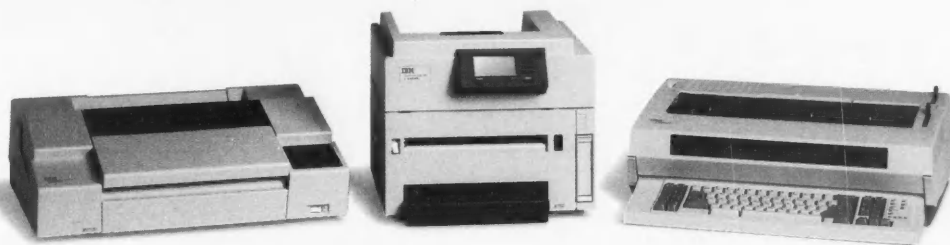
The product offers LEDs that inform users when the Patriot is cleaning up normal AC line power or is on battery backup or when battery power is low.

Three audible alarms are included that alert users to On Battery, Low Battery and Shutdown conditions.

The 600VA costs \$379.

► **Best Power Technology**
(608) 565-2929

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Object technologies draw good reviews

Some cite shortcomings in Microsoft model

By Melinda-Carol Ballou

■ Early developers piloting the use of the OpenDoc and distributed Object Linking and Embedding (OLE) praised the potential of the technologies and emphasized the importance of education to prepare for the transition to object-oriented operating systems and development.

Both technologies are evolving: A developer's kit has yet to ship for the Component Integration Laboratories' OpenDoc; Microsoft Corp. has made an early release of a developer's kit available for its distributed OLE.

But Microsoft currently holds a significant advantage: OLE on single desktops has been in the marketplace for nearly two years and is practically ubiquitous in the Windows arena.

Even though OpenDoc may have a more robust technical architecture, according to some developers and industry analysts, only separate elements, such as IBM's System Object Model/Distributed System Object Model (SOM/DSOM) and Apple Computer, Inc.'s Apple Events, have been available until now. Fewer vendors have pledged support for OpenDoc.

"People should be playing with [distributed OLE] now and at least studying it," said Alex Kalpaxis, a vice president at Bankers Trust Co., an investment firm in New York. He said the advantages of the technology include the ability to build classes of objects from which developers will be able to create new entities, or "aggregates," as the dynamics of the finan-

cial marketplace shift.

"Skeptics may question [the scalability of this OLE] environment or the security implications, but I don't know of anyone doing a large-scale distributed object environment yet," Kalpaxis said. "There's still work to be done, but the [Microsoft] DCE RPC [transport mechanism] works and... I'm confident that the required technology will come."

Eagerness and skepticism

Some developers said they can hardly wait for distributed OLE and Microsoft's upcoming object-oriented operating system, code-named Cairo, to arrive so they can speed the performance of their OLE applications.

"What is the performance of OLE now? Does anyone truly know? I can't wait until Cairo" is available, said Larry Harris, technical manager at Quick Corp., a market data provider in New York.

But OLE skeptics include one developer who plans to support both OpenDoc and OLE (see story page 99).

Richard Kilmer is manager of systems architecture at TelePad Corp., a Reston, Va., vendor that develops portable hardware systems with pen- or voice-based

input devices. Kilmer said he needs extensible, reusable components that he can create quickly and that are also "pretty much bulletproof."

According to Kilmer, OpenDoc has a more robust architecture than OLE for achieving that because it uses Apple Events in its scripting language. It also has an "engine based on SOM and plumbing which uses DSOM." Apple Events lets objects communicate with one another in a way that is independent of the user interface; OLE does not, he said.

SOM is also an object model that can create objects separate from the user in-

SOM framework to inherit a folder class containing 70,000 lines of code and to then modify its behavior by changing 300 lines of code. This saves both time and money. "I have a robust object that I can reuse. That's where inheritance is really useful," Kilmer said.

No inheritance

OLE and its Component Object Model do not support inheritance but support instead a feature called "aggregation." Aggregation lets developers leverage an object definition by combining that definition with a new interface definition, Microsoft officials said. While inheritance creates hierarchical relationships between the existing and new objects, aggregation is a flat model, industry analysts said. There is no necessary relationship between aggregated objects.

For Kilmer, the ability to create distributable objects using DSOM, along with DSOM's support of the Object Management Group's Common Object Request Broker Architecture (CORBA) specification, are key OpenDoc differentiators.

"With aggregation, you hand off, or aggregate, a call [to another object], but that's not the same thing as inheritance, and it doesn't offer the same benefits," he said.

And the advantage of support for standards such as CORBA means that his company will not be locked in, Kilmer added.

"I don't want to tie myself to one vendor. If I design from the point of view of CORBA, I will be able to change my target environment," he said. "If it's prudent to switch [to a different CORBA-compliant

Object, page 92

The lineup		
The following vendors offer products supporting Microsoft or OMG object models:		
VENDOR	OBJECT MODEL	PRODUCT
Microsoft Corp.	COM	OLE 2.0 (Cairo)
IBM	CORBA	SOM/DSOM
Sunsoft, Inc.	CORBA	Project DOE
Hewlett-Packard Co.	CORBA	Distributed Object Management Facility, ORB-Plus, Distributed Smalltalk
Digital Equipment Corp.*	CORBA (OLE)	Object Broker
Expersoft	CORBA (OLE)	XShell ORB
AT&T	CORBA (OLE)	Cooperative Frameworks

*Developing technology with Microsoft to link OLE and CORBA products

interface. It supports implementation inheritance, which is the ability to create a new object by enhancing or modifying characteristics of an object or class of objects.

Kilmer cited the ability under IBM's

Richard Finkelstein

ODBC spells headache



Microsoft's Open Database Connectivity (ODBC) is supposed to make life easier by giving developers a single API to relational and nonrelational databases. Vendors love ODBC because with it they can claim that a product works with dozens of front-end tools and back-

end database servers. Like all fantastic claims, ODBC's hype falls far short of its promise.

ODBC is not really a single standard but many. The ink is barely dry on ODBC 1.0, and there is already an ODBC 2.0. Within each specification there are several

conformance levels, so each vendor builds ODBC interfaces to different conformance levels and interprets the specifications differently. There is a potpourri of APIs rather than a single one, and the one used depends on which ODBC interfaces a developer uses.

Developers must use trial and error to determine what the ODBC driver is capable of doing and how it is doing it. If the ODBC driver is doing something wrong or is incompatible with the target database management system, then the developer is stuck. ODBC interfaces are notorious for being erratic and difficult to debug. Instead of programming directly to the native API, developers end up spending their time trying to get the ODBC interface to work properly.

Even if the ODBC driver is working to specification, it may not map correctly to all of the target DBMS functions. In this case, the developer must either work around the problem or program directly to the DBMS using the ODBC "escape clause." But when a native DBMS command is issued through the escape clause, all of the value of ODBC is lost. The developer is now writing directly to the native API.

Of course, in order to know whether the ODBC interface is doing its job well, the developer must first understand the target DBMS' APIs. So the developer must still

be familiar with each native API on top of the ODBC API as well as the mapping processes between them. The developer must also be clever enough to debug the ODBC drivers and figure out work-arounds when the ODBC interface is behaving poorly. This does not sound like it saves work.

Proof is in the performance

ODBC drivers and applications tend to have excruciatingly poor performance characteristics. One of my clients was convinced by Microsoft representatives that Microsoft Access with ODBC drivers for Microsoft SQL Server had no performance problems. It was surprising—even for me—when a screen took 70 seconds to display and five seconds just to go to the next record. It is incredible that Microsoft still pretends there is no loss of performance or functionality with ODBC. How many clients have to go through this expensive learning process before Microsoft is forced to come clean?

Most tools vendors know ODBC is unstable and degrades performance, which is why companies such as Powersoft charge a hefty price for direct API interfaces that are optimized for the DBMS. Powersoft gives ODBC away for free, which further confirms the old adage

Finkelstein, page 92

Uniface uses IQ to report and query

By Melinda-Carol Ballou

■ **Tools vendor Uniface Corp. recently unwrapped data retrieval and reporting tools said to allow end users to easily tap Uniface's data access features.**

Dubbed the Uniface Personal Series, the tools incorporate technology from IQ Software Corp. in Norcross, Ga. They were designed to allow users to access data in 60 databases across 35 platforms.

"As an application developer, I can't envision every possible output a user might want. This lets them customize [reports] as they want to and keeps the IS department out of it," said David Crawford, product development manager at Revere Technology, Inc. in Birmingham, Ala.

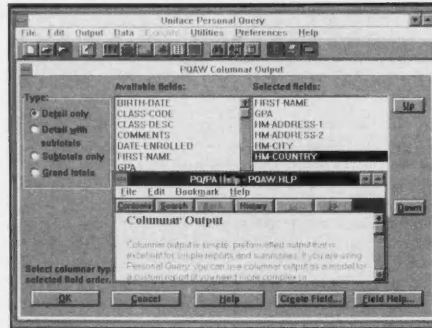
The tools include the following:

- Uniface Personal Query, to access data in relational and non-SQL databases.
- Uniface Personal Access, to access data and transfer it to personal productivity applications.
- Uniface Business Graphics.

The Uniface fourth-generation language has until now offered robust capabilities for application development and data retrieval across platforms but has been difficult even for developers to use and inaccessible to end users, said Rich Finkelstein, president of Performance Computing, Inc., a Chicago-based consulting firm.

"The IQ products were a good choice for Uniface because they are relatively easy to use and offer a good mix of functionality

and usability," he said. "You can create a wide breadth of reports, for instance, and [the products] let you split process-



The Uniface Personal Series offers cross-platform access

ing on either the client or the server."

Developers can maintain control because the Uniface Personal Series lets them create a central repository of common business rules and data definitions. It also uses the underlying security of each database and protects the integrity of the original data, according to company officials.

Personal Query and Personal Access ship this month with support for Windows and the Open Software Foundation's Motif. Pricing ranges from \$80 to \$500 per user, based on CPU. One database administrator kit per site is needed to run the tools and costs \$2,000.

Uniface Business Graphics is shipping now at prices ranging from \$325 to \$32,000, depending on platform and number of users.

Firm attacks client/server myths

By Ed Scannell

MultiSoft, Inc. President Charles Lombardo believes he has a better mousetrap for helping corporate accounts make smart transitions to appropriate client/server strategies.

But faced with a rich history of myths about what client/server is and what it takes to get there, Lombardo may need lots of cheese and patience.

Those myths—that information systems departments can toss away their mainframes, that most mainframe technology is dead and that client/server applications are cheaper to run and maintain than their mainframe counterparts—will be tough to eradicate.

Anchored in the belief that it is best to equally divide work between client and server, Lombardo said he thinks he can succeed in the myth-breaking business.

Expensive savings

What mainframes do best is carry out intensive database and I/O functions. PCs are best at handling local edits and validations, screen presentations and front-end handling. But many front-end applications and mainframes are not made fully aware of what the other is doing or can do, Lombardo said.

Most of the front-end handling applications today, Lombardo said, save only 1% to 5% of a mainframe's CPU cycles. This is because most front-end applications still require the mainframe to handle elements such as labels and screen data for PCs and 3270-type terminals.

According to Lombardo, his company's recently announced Windows Class Libraries Enterprise System (WCL/ES) package lets users with heavy-duty transaction processing applications move many of their database tables off the mainframe to a PC, saving 10% to 20% of the mainframe's CPU cycles.

He said a built-in software distribution utility called the WCL Software Distribution Option lets users maintain the same

level of data integrity they had when their database tables were on the mainframe.

IS professionals appeared receptive to products like those from Princeton, N.J.-based MultiSoft, but said the tools can be expensive in terms of training programmers who have worked with Cobol for years.

"Products like these look like they can save you thousands of dollars. But getting dozens of Cobol programmers off the mainframe sometimes is as difficult as getting the software off there," said Tom Flanders, an IS executive at a communications company in Gaithersburg, Md.

Tough to adapt

There appears to be psychological and emotional barriers to getting mainframe programmers to think more like modern day programmers by trying object-oriented solutions. In some cases between 40% and 50% of an IS staff cannot adapt their skills to the transition to a client/server environment, Lombardo said.

Another psychological inhibitor to implementing client/server strategies is the fear some IS departments have of significantly rearchitecting the host software that holds most or all of a company's mission-critical data.

These accounts tend to simply add functionality to PCs, according to Lombardo. But even high-end PCs are limited in the kinds of complex, mission-critical duties asked of them, and some IS departments wind up placing back on the mainframe what they once took off.

Younger programmers with lots of experience working the client side of the street also have their problems in a client/server world.

"Mainframe programmers who can't or won't adapt are a problem, but one of the disciplines they had is creating applications with true multitasking. They were not weaned on DOS and Windows," said Jim Mays, a systems analyst at a Connecticut-based insurance company.

Finkelstein

CONTINUED FROM PAGE 91

"you get what you pay for."

Microsoft and other tools vendors claim that writing portable applications is a cinch using ODBC. But to do this with ODBC, it is necessary to design using a least common denominator approach.

Every DBMS has special features that usually constitute the reason an organization purchases it. Things that are possible or practical in one DBMS are simply not doable in others.

Figuring out the least common denominator and maintaining it as DBMSs evolve is not possible without huge expenditures of money and time, and this will worsen as DBMS products evolve in different directions. Already there are object-relational databases and multidimensional databases that are beyond the scope of ODBC.

What's the benefit?

When vendors try to convince me that there are no functional or performance penalties in using ODBC, I point out that if this were true it would not be necessary for tool vendors to package direct interfaces in their products. If ODBC really provided all the functionality and performance of direct interfaces, then it would

All ODBC adds is an extra layer of problems and complexity that is not needed.

make sense that vendors offer just ODBC interfaces and nothing else. The fact is that vendors such as Powersoft, Gupta, Uniface and even Microsoft still provide direct drivers because they know it is the best and most practical way to access DBMSs.

Fundamentally, ODBC is flawed. Microsoft has as much ability to standardize DBMS APIs as DBMS vendors have to standardize Windows APIs. But you have

to give Microsoft high marks for chutzpah. It cannot standardize its own API for all the versions of Windows, yet it thinks it can standardize everyone else's DBMS APIs.

ODBC may work with simple applications that do only simple queries and do not

depend on optimized SQL for best performance. Microsoft and other vendors are temporizing their claims. They admit that ODBC is still "maturing" and that there are problems. I part ways with ODBC vendors in that I think the problems are chronic and will get worse.

At this time I see almost no benefits from ODBC. All it adds is an extra layer of problems and complexity that is definitely not needed in the sufficiently complex world of client/server.

Finkelstein is president of Performance Computing, Inc., a Chicago consultancy specializing in client/server technology. He can be reached by CompuServe at 72240.2536.

Object

CONTINUED FROM PAGE 91

Object Request Broker], my design will stay intact."

Kalpaxis, on the other hand, said Microsoft's aggregation offers "fairly elegant" code management and object management techniques. While the aggregation is not yet ready for developing production applications, he said he expects Microsoft to ship key utilities by mid-1995

that should help.

Bankers Trust expects to unite OLE with CORBA using Digital's Object Broker and the emerging Common Object Model that Digital and Microsoft announced last week.

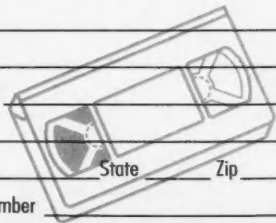
Harris will write OLE applications but said he welcomed IBM's release last week of its SOMObjects for Windows, which supports OLE [CW, March 14]. "They've agreed to support OLE so that when I write to OLE, I'll get the best of both"—support for SOM/DSOM applications and OLE, he said.

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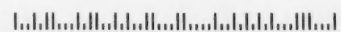
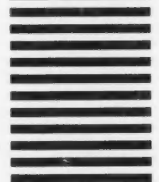
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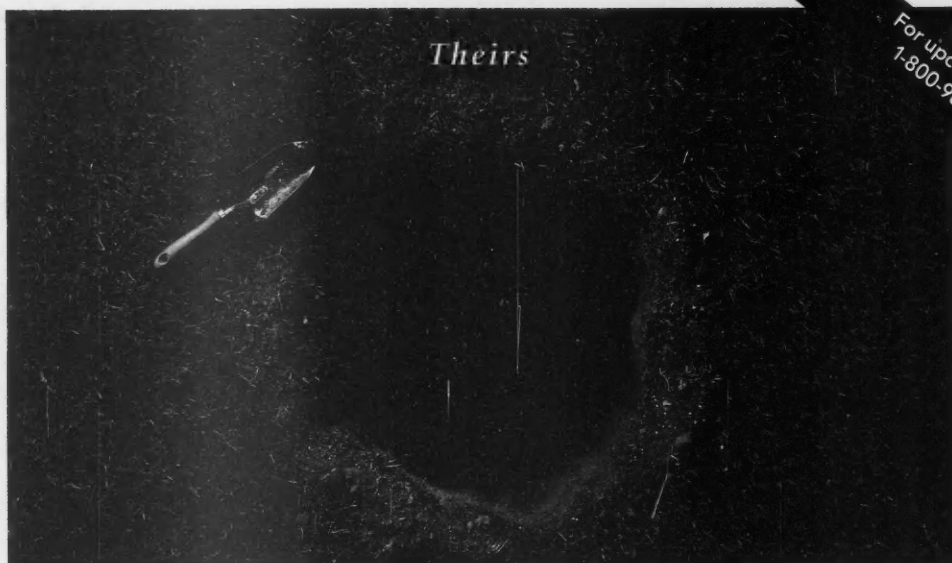
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- 2 PCMCIA Type II slots
- Optional Ethernet card
- Optional internal hard disk

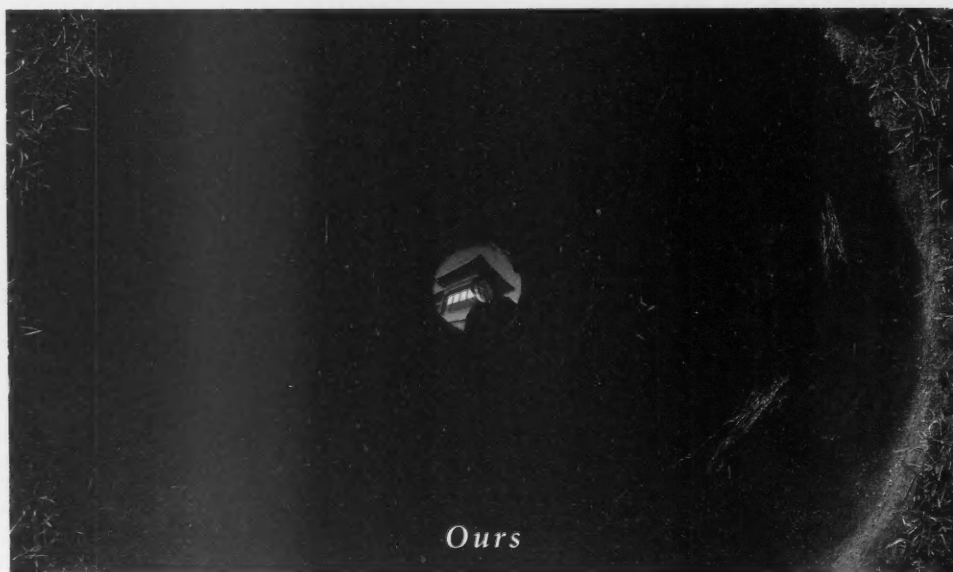
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PROGRESS
SOFTWARE

Symantec supports PowerPC

By Melinda-Carol Ballou

Symantec Corp. may help bolster the fortunes of the PowerPC with a new version of its Macintosh compiler.

Symantec C++ 7.0 for Macintosh, announced last week, offers a cross-development migration kit that will allow developers to port their applications to the PowerPC.

"Porting to the PowerPC will be important for us," said Scott Mullins, a research assistant at Purdue University.

Symantec in Cupertino, Calif., will also ship native tools for the PowerPC later this year.

What you get

Included with the migration kit are a PowerPC cross-compiler, a linker and a debugger, which work in conjunction with Symantec C++ 7.0 to allow developers to recompile their applications for the PowerPC without making changes to them, according to company officials.

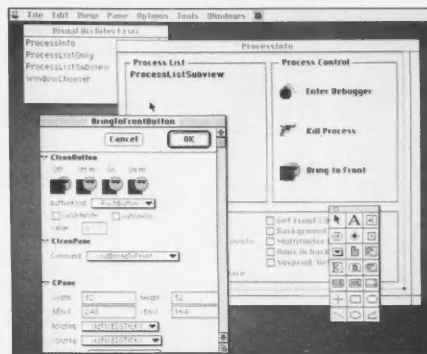
Other features include the following:

- Version 2.0 of the product's Think Class Library, which includes multiple inheritance and templates and lets developers write applications that are portable to the Power Macintosh.
- An integrated graphical editor, called Visual Architect, that will speed up the

development process by letting developers visually create user interfaces and then automatically generate the code.

• A Think Inspector debugger that lets programmers view and modify instances of an object while executing applications, making it easier to debug and locate problems such as memory leaks.

"This looks like a good solid contact of



Symantec is offering its C++ development software for Apple's new PowerPC-based Macintosh

the bat to the ball and matches stride for stride the compilers on the Windows side, which have enjoyed a significant acceleration of capabilities in the past year," said Brent Williams, an analyst at International Data Corp., a consulting firm that has offices in Mountain View, Calif.

A developer's edition of the PowerPC cross-development kit costs \$100; Symantec C++ 7.0 costs \$499 with an upgrade price of \$149.

Bristol Technology, Inc. has announced Wind/U 2.0, a Windows-to-Unix portability tool kit.

According to the Ridgefield, Conn., company, Wind/U 2.0 supports Microsoft Corp.'s Win32s application programming interface and the 32-bit version of Visual C++. The tool kit lets users build applications from the same source base with Visual C++ or other Windows development environments that run on Windows, Windows NT and Unix/Motif.

Wind/U 2.0 enhancements include integration with Bristol's Xprinter printing library and the addition of PCL4 support to the PCL5 and the PostScript printing capabilities of Wind/U. The Wind/U Spy enhancement allows developers to monitor messages sent to one or more windows and to examine the values of message parameters. Color palette and color common dialog support is provided.

The Wind/U 2.0 costs \$9,950.

► **Bristol Technology**
(203) 438-6969

MultiQuest Corp. has introduced ShowCASE, a multiuser software engineering tool that supports the Booch method of object-oriented design.

According to the Schaumburg, Ill., company, the product lets software developers create graphical models of their systems using smart diagramming tools that understand the semantics of the Booch methodology. The products enable C++ code to be generated directly from the model.

ShowCASE costs \$749 on Windows and Macintosh machines and \$2,995 on Sun Microsystems, Inc.'s SPARC and Hewlett-Packard Co.'s HP 9000 platforms.

► **MultiQuest**
(708) 240-5555

Irvine Compiler Corp. (ICC) has announced an assembler development environment for Intel Corp.'s 1960 family of microprocessors.

According to the Irvine, Calif., company, the ICC 1960 Assembler Development Environment includes a macro cross-assembler, instruction-level simulator, profiler, linker, archiver and disassembler.

Utilities such as size, name, dump, strip, ROM generation and documentation are also provided.

With the simulator, the ICC 1960 Assembler Development Environment costs \$12,000. Without the simulator, the package costs \$8,000.

► **Irvine Compiler**
(714) 250-1366

Tower Technology Corp. has announced TowerEiffel System Release 1.2 for OS/2, an object-oriented programming system.

According to the Austin, Texas, company, the system includes a high-performance Eiffel 3 compiler plus an integrated Emacs-based programming environment with browsing and documentation tools, syntax-directed highlighting and auto indentation.

A single commercial license costs \$1,295.

► **Tower Technology**
(512) 452-9455

Easel Corp. has announced Enfin Release 4.0, an application development environment designed to make object-oriented programming more intuitive; and TeamBuilder, a development tool that lets groups of developers simultaneously build applications.

According to the Burlington, Mass., company, Enfin Release 4.0 provides object icons organized by functional groups and color-coded to help developers visualize functions.

TeamBuilder offers check-in/check-out capabilities of classes and files and works within the Enfin/Class/Browser.

Developers can group objects together as a project, with each object having a separate revision level, date stamp and label.

The Windows version of Enfin Release 4.0 is priced at \$3,995 for the SQL edition and \$8,900 for the corporate edition. Prices for TeamBuilder start at \$495.

► **Easel**
(617) 221-2100

Digitalk, Inc. has announced Parts Communications Wrapper for Emulator High-Level Language Application Programming Interface (EHLAPI), a component for Parts Workbench for OS/2 that allows integration with legacy mainframe systems by adding visual object-oriented client/server technology.

According to the Santa Ana, Calif., company, Parts Communications Wrapper for EHLAPI was designed for users who need graphical user interface front ends in their legacy 3270/5250 mainframe systems. It enables users to convert 3270/5250 text screens to graphical screens. The result is a clean, intuitive interface without changing the host application.

Features include a screen definition window, screen list browser, playback mode, exception handling and multiple session support. The product costs \$995.

► **Digitalk**
(714) 513-3000

Visual Edge Software Ltd. has announced Cross Platform Toolset, an object-oriented tool kit that enables developers to create portable interfaces across the Open Software Foundation's Motif and Microsoft Corp.'s Windows and Windows NT.

According to the St. Laurent, Quebec, company, the product is an enhancement to UIM/X graphical user interface development tools for OSF/Motif. It offers objects, libraries and the documentation needed to generate production-quality applications for deployment on multiple platforms.

Objects can be implemented using a variety of third-party offerings, including Windows controls, Motif widgets, Visual Basic custom controls and class libraries.

The Cross Platform Toolset costs \$2,500.

► **Visual Edge Software**
(514) 332-6430

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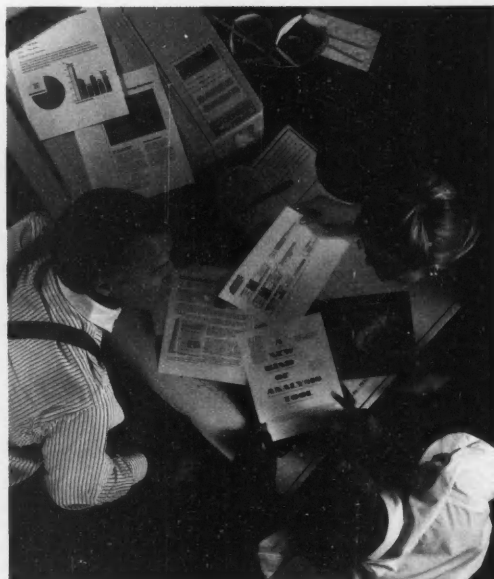
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Getting to "Aha!"

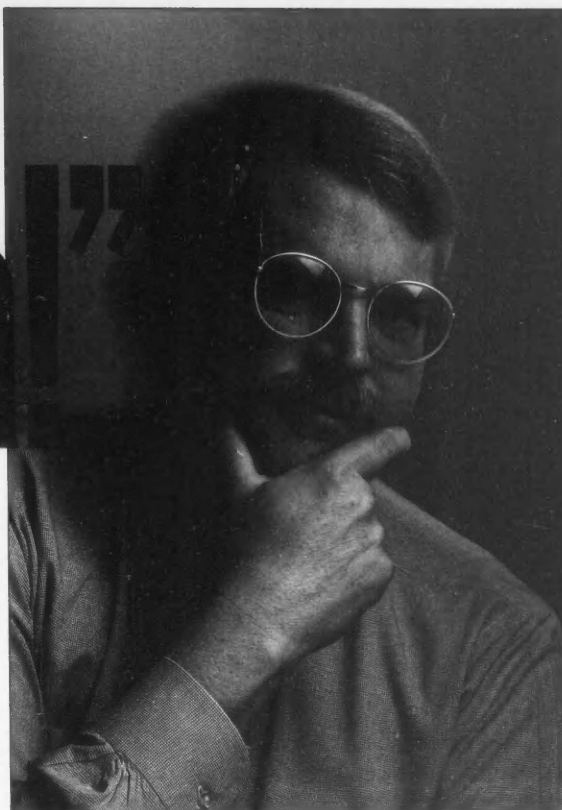
The old saw — it's not the technology, it's the people — was never more true than it is with object technology. Object technology requires new perspectives, from the executive suite to the programming pool.

connections between the PC and the mainframe.

"A programmer who was developing some code for the project suddenly realized that he could encapsulate the logic in an object, and that immediately released every other programmer from the need to worry about that nasty little task. That was an 'aha! moment' for this programmer," Burmaster says.

Successful object technology requires everyone from company executives and departmental manag-

Cigna Corp.'s John Burmaster:
*Aha! is the point at which
you realize the power of
object technology*



"Aha!"

That, John Burmaster says, is the key to object orientation.

"We were developing a project trying to use object technology concepts," recalls Burmaster, senior systems consultant at Cigna Corp. in Philadelphia. One of the issues was managing

ers to MIS managers and programmers to reach the "aha! moment," but there are some sizable obstacles to overcome before that can happen.

Often, executives, who need to commit vast resources to the transition to object technology, and functional managers, who need to help lay the groundwork, don't really understand what it is. Many programmers, secure in their skills and habits, resist object technology as an alien and threatening methodology.

Managers have to cope with the reality that trained object technology programmers are almost nonexistent, and training staffers is difficult, time-consuming and expensive. Managers also have to deal with the fact that no one really knows how to measure

Aha!, page 104

by kathleen melymuka



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Object primer

Two important things to know about objects

"I'm alive." You can understand objects better by thinking and talking about them in the first person: "I know my own . . ." and "I can . . . myself."

"I'd rather do it to myself." You can work with objects more effectively when an object acts upon itself.

what is an object?

Objects

An object is a person, place or thing. When brought to life, it knows things (called attributes) and does things (called services).

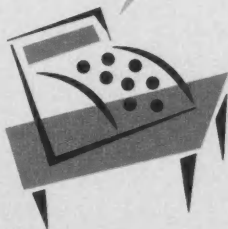
"I am a store."



"I am an item."



"I am a sales transaction."



"I am a customer."



Classes

A group of like objects make up a "class."

Class: Item



- I'm an object of the class "Item."
- I know my manufacture date and my arrival date.
- I can check my availability.

Classes can be "specialized."

Class: Perishable item



- I'm a perishable item.
- I know my manufacture date, arrival date and expiration date.
- I can check my availability.

three key concepts

Encapsulation

The principle that an object should hide things from other objects, limiting visibility about what "I know and do."



Inheritance

The principle that a class can extend from another previously defined class. The guiding principle is to organize the classes according to generalization/specialization.

Generalization



Class: Item
"I'm an item."

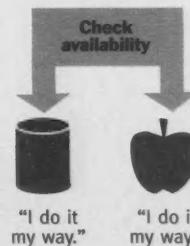
Specialization



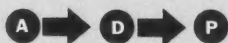
Class: Perishable item
"I'm a perishable item."

Polymorphism

The principle that objects in different classes may understand the same message yet respond in different ways.

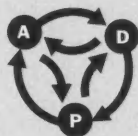


how objects make programming more effective



Structured development

Analysis, design and coding take place in the traditional "waterfall" way. Each step is isolated from the other. Working results can take two or more years to see.

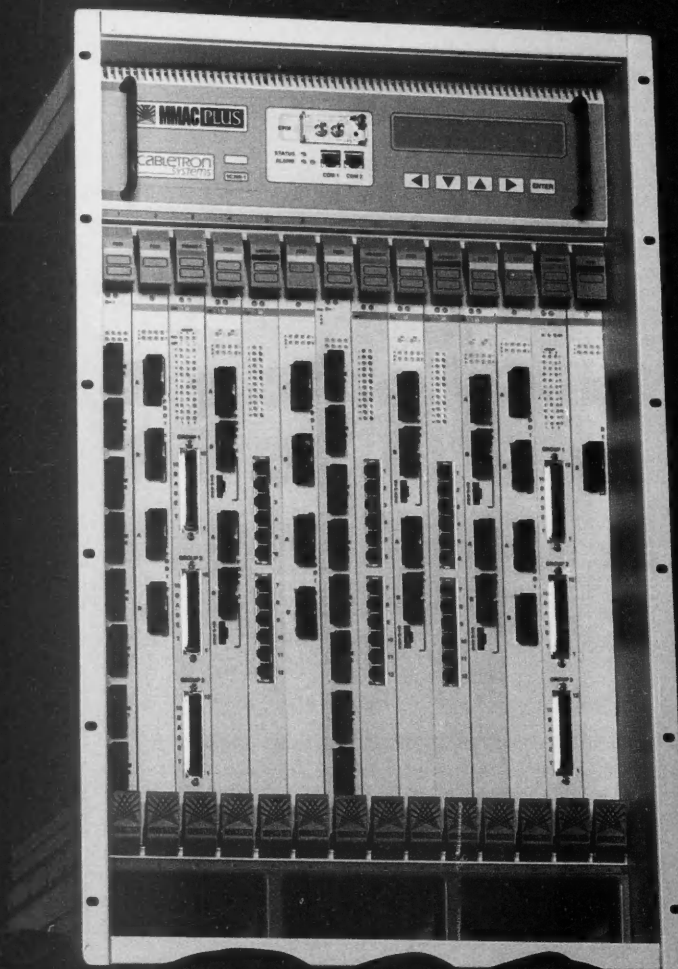


Object-oriented development

One multifaceted model is used from concept to code. Because one underlying model is used, teams apply analysis, design and programming concurrently.

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Aha!

CONTINUED FROM PAGE 99

progress on an object technology project.

Finally, large companies often resist the idea of reusing code. But without reuse, the whole point of object technology — the "aha!" — will never occur.

Training will overcome these obstacles, but object technology training doesn't mean sending programmers to object technology class. It means struggling with major adjustments in outlooks and expectations throughout the organization.

Why bother? Because those who have achieved the "aha!" say it's worth it. Companies well along in object technology claim to have developed new systems in one-fifth the time and with one-tenth the resources that would have been needed using traditional methods.

But to get things rolling, nontechnical people have to understand what object orientation is all about.

Recognizing the elements

"Object orientation is a methodology by which we identify components [of a business] and the relationships between components," says Robert "Skip" Savoia, vice president at CSC Consulting Group, the systems integration unit of Computer Sciences Corp. in Waltham, Mass. "Each time you identify a component that can be isolated and work on its own behalf, it's an object," he says.

A company itself is an object, made up of smaller objects such as divisions. Divisions are made up of smaller objects such as departments. Objects are linked together through the business processes of the company.

In object-oriented programming, once an object is defined and coded, it can be reused in any other system. Because new code is necessary only to link objects, the

amount of code needed in a new system — and therefore, the time and resources needed to complete it — is drastically reduced.

Moreover, because object systems are modular, they can be refined or changed easily to reflect changes in the company or its business processes. Objects can simply be "unplugged" and new objects "plugged in."

Demystifying the technology

But many executives fail to realize object technology's potential as a business strategy because they think of it as yet another in a long line of obscure "technologies of the month."

"I started looking at object orientation from the technical perspective and became so confused that after two or three months, I was more ignorant than when I began," Savoia says.

The key for nontechnical people is to look at object orientation from a business perspective.

"It isn't about technology," Savoia says. "It's about business. Object orientation is a methodology by which we identify components [of a business] and the relationships between components. Objects speak business language; they don't talk programming. They talk about how you are organized."

Managers and business functional people need to clarify the company's organization and business processes and leave the technical aspects of the project to the technicians. Prodding your technicians toward their own "aha! moment" can be tricky, however, especially if they see object technology as a threat to their personal fiefdoms.

"System people are supposed to be innovative and creative," Bill Feraudo says, "and they are if they're solving other people's problems — but not in their own environment. They sometimes can't figure how to re-engineer themselves."

Feraudo speaks from experience. He presided over development of the first —

and still the world's largest — main-frame object-oriented system at Brooklyn Union Gas Co. in the late 1980s. Now vice president at the company's Customer Assistance Division, he was at that time its vice president of MIS.

"Watch out for the technocrats who

hooked on the technology, they drew the rest of the staff in with minimal difficulty.

Achieving the "aha! moment" takes more than the right attitude, however. Even if your programmers are willing to change, enlightenment doesn't come easy. CSC Consulting estimates that it

Object objections

Executives **don't understand it.**

Programmers **don't want it.**

Learning it takes more **time and money** than anyone wants to commit.

Managers have to develop **new rules** for managing it.

When it's finally in place, large **companies resist using it.**

don't want to buy in," Feraudo says. "If you're surrounded by temperamental systems people, if they don't understand their systems as the means to an end, they will protect their own environment and won't want to change. The more technical they are, the more difficult it can be to get them to align with the business."

"Opposition to [object technology] still remains from the community that must be retrained," agrees Steve McClure, an analyst at International Data Corp. in Framingham, Mass., who has studied the object technology training problem.

Feraudo says he was blessed with a chief technologist who knew how to get programmers on board: He invited the natural leaders in the programming staff to help him tinker with object technology to see what it could do. As they slowly got

takes two years and \$70,000 to turn a single novice object-oriented programmer into a guru.

"The obvious problem is how do we train our people?" says Roger Zauel, director of North American systems at Ford Motor Co. in Dearborn, Mich.

"This new technology is very demanding intellectually," he explains. "It is not easy to understand for people who have grown up in a previous technology. The great fear is that not all of our people will be able to make the transition, and even for those who do, it will take a lot of time and some failures and errors along the way."

Zauel estimates that it takes six months just to get a programmer proficient enough in object technology to work alone.

Aha!, page 108

Getting oriented with object technology

Upcoming shows and conferences that focus on object-oriented technology

MARCH 21-24

UniForum
San Francisco
Contact: IDG World Expo
(800) 545-3976
Jon Siegel will lead an all-day tutorial, "Introduction to Object Technology," on March 21.

MAY 23-25

Testing Object-oriented Systems
Washington
Contact: Technology Transfer Institute
(310) 394-8305
Seminar featuring Robert V. Binder, systems consulting firm president.

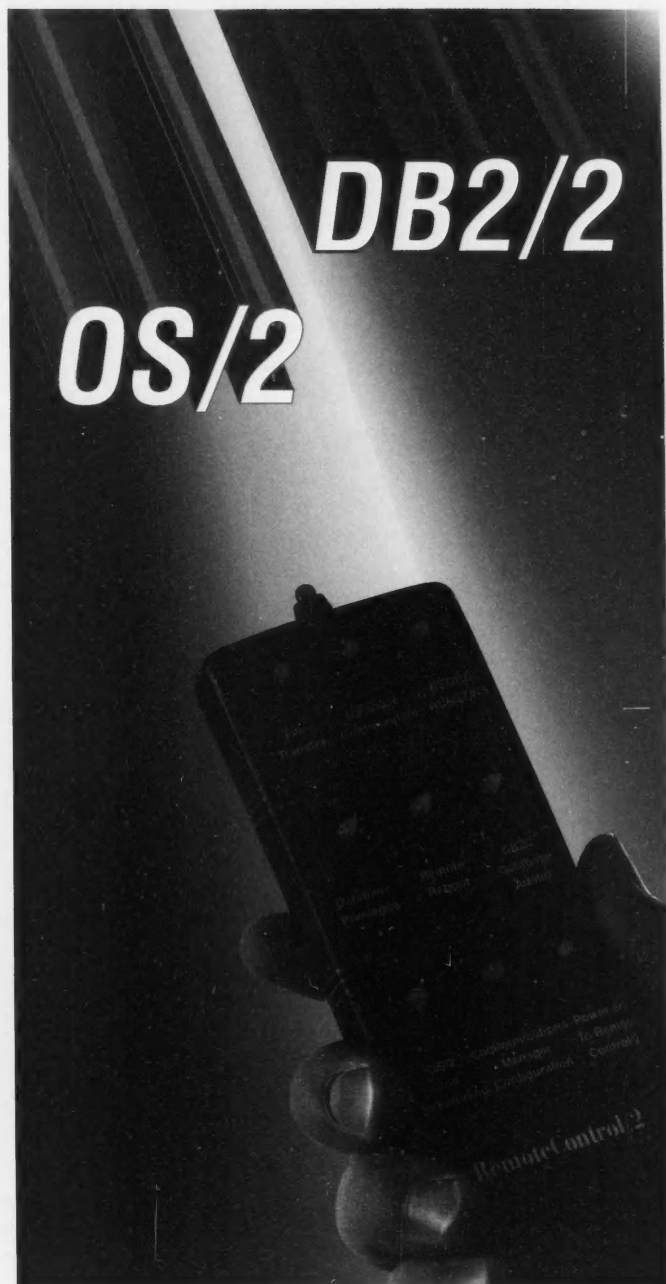
JUNE 21-22

Third Annual NextStep Expo
San Francisco
Contact: Todd Keefe
Digital Consulting, Inc.
(508) 470-3870
Keynotes on the benefits of object technology for enterprisewide client/server computing environments.

JULY 26

Object World
San Francisco
Contact: Bill Hoffman
(508) 820-4300
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When a few engineers at Microsoft set out to write Windows NT, they sat down with many cups of coffee, and computers built around the MIPS R4400 RISC microprocessor.

(No wonder: the NEC V_R4400 MIPS processor is at the heart of some of the most powerful computers in the world.)

During the next few years, they worked long and hard, missing quite a few dinners with their families and untold televised sporting events.

Today, Windows NT makes it possible for companies to run their enterprise software on a whole new class of dependable, affordable machines. Like the NEC Express RISCserver, direct descendant of the machines used to write NT itself. And it gives software developers, designers and engineers access to remarkable new tools like the NEC Image RISCstation.

In short, a few engineers sat down. And the entire computing world leaped.

The only Windows NT-specific systems in the industry: NEC MIPS RISC Systems

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• Image RISCstation

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Aha!

CONTINUED FROM PAGE 104

"It's almost impossible to find the resources available in the outside world," he says. "So [information systems staff] people who've got the picture have to spend their time training others and progressing the project at the same time. It's hard to do both at once."

The result—at least on initial projects—is a vicious circle. There are too few trained people to complete the project on time, so trained people have to spend some of their time training others, which in turn makes meeting project deadlines even less likely.

"The problem is that [project deadline] dates are upon us before we accumulate enough trained resources," Zauel says.

Not the norm

There's really no way to shortcut the training process either, says Victor Harrison, manager of applications development at John Deere & Co. in Moline, Ill. "Object technology depends on a way of thinking that is not at all like the Western, traditional way of thinking," he observes. "The biggest obstacle is coming to grips with this."

Traditional coding is linear. The programmer writes the code, and it's done.

"In [object technology], you define objects and live with them through the whole life cycle," Harrison says. "You provide some of the functionality [of an object] and iterate until you've got more of the functionality. In some respects you can iterate forever."

This type of programming is difficult to learn and nearly impossible to measure by traditional standards.

"It's not as simple as sending someone to class," Harrison says. "It takes time, mentoring and re-education. You have to revise your expectations in terms of how productive people are going to be."

"It takes six months for the education and re-education," he continues. "You can tell somebody a concept, and the first time they go through the process, some of it sticks. Then they go back a second time in a month or so and more of it sticks. There's a gestation period. You have to let them think about it for a while."

"It's a function of doing, too," he adds. "You don't just train and retrain; you put a mentor with the people going through the process. Let them actually do it, then re-educate, then they understand."

You'll also have to retrain yourself about how to measure progress. "All the methods managers manage by typically disappear... when dealing with object technology," Harrison says.

Traditionally, to determine whether you're on budget or on schedule for a programming project, you measure what

percentage of analysis, design and programming work is completed.

"That's not applicable" with object technology, Harrison says, because of the open-ended, iterative nature of the work.

"And there's no class that I know of to teach you. As a manager, you wind up having to learn [object technology] to manage, and you look for your own markers—you develop your own questions: Do you have the silhouette of the class library done? How many of the methods or features on this object are completed?" he says.

If you can get your projects finished, your people trained and your reusable object library in place, the ultimate migraine may still be lurking. The larger your company, the more likely it is your object library will end up gathering dust rather than kudos because enterprises have not been trained to reuse code.

"There's been a lot of hype about reusability," Harrison says. In reality, "reusability is expensive and hard. Short-sighted people think they will get it across the enterprise and they'll have one single [object] library. That's a certain bovine material."

"Reusability is fine in a very limited small project group setting," he says, "but it's simply not really practical across an enterprise."

Ford's Zauel has reached the same conclusion.

"I don't think object-oriented technology makes it any easier to get commonality of use of code or interchange of code across different parts of a large organization," he says.

"It doesn't help with the fundamental problem: getting people to adapt to code that already exists. You need to be an organized and disciplined organization to get that reusability."

"Any subunit [at Ford] could achieve reuse of code on the same basis as a smaller company," Zauel

says. "What I'm talking about is the problem of the megacorporation: How do I get reuse between business units?"

"That's a classic problem; the same as always," he says. "I don't think object orientation will make it easier because it's a political problem rather than a technical problem. That problem will always be as tough as it has been."

Executives don't understand it. Programmers don't want it. Learning it takes more time and money than anyone wants to commit. Managers have to develop rules to manage it. When it's finally in place, large companies resist using it.

Those who have achieved object technology enlightenment, however, say the "aha!" makes it all worthwhile.

"It's the point at which you finally realize the power of [object technology] and what it can buy for you," Cigna's Burmaster says.

Melymuka is a free-lance writer in Kingston, Mass.

Object-oriented opportunities

Sources for object technology training are growing

Advanced Concepts Center
of Martin Marietta
King of Prussia, Pa.
(800) 438-7246

Provides training courses in software and systems re-engineering with emphasis on object-oriented methodologies. Courses are available at customer sites.

Batkey-Howell, Inc.
Parker, Colo.
(303) 841-0780

Offers object-oriented programming in C++ training for experienced C programmers. Training offered in-house or on site.

Computer Methods Corp.
Shirley, Mass.
(508) 425-9125

Offers object-oriented training and support services designed to help companies become open-networked organizations supporting collaborative and enterprisewide computing.

DBMI
Manchester, Conn.
(800) 232-3264

Offers basic and advanced courses in C++ and Smalltalk, object-oriented analysis and design, managing software development and building and integrating applications using CORBA.

Digitalk, Inc.
Portland, Ore.
(503) 242-0725

Assists organizations with the industrial/commercial application of Smalltalk and other object-based technologies.

Genesis Development Corp.
West Chester, Pa.
(215) 429-1553

Offers training to software development engineers and managers in object-oriented concepts and technologies.

GHG Corp.
Houston
(713) 488-8806

Offers training in object engineering, object analysis, object-oriented design and implementation and programming with C++.

Icon Computing, Inc.
Austin, Texas
(512) 258-8437

Object-oriented education company, offering one- to five-day intensive courses in object technology.

The Institute in
Computer Science
Santa Clara, Calif.
(800) 660-UNIX

Offers several courses that cover the C++ programming language and object-oriented design and programming.

The Institute of
Object Technology
Goleta, Calif.
(805) 685-1006

Offers courses in all object technology topics for all levels of expertise. Courses are offered in both management and technical tracks.

The Instruction Set
Waltham, Mass.
(800) 874-6738

Provides training for a wide range of open systems technologies, including C, C++, Unix, OS/2, Windows, object-oriented programming and relational databases.

The Learning Tree
Reston, Va.
(703) 709-6405

Offers several day-courses in object-oriented analysis and design, C++, hands-on object-oriented programming and client/server and open systems.

McCabe & Associates
Columbia, Md.
(800) 638-6316

Offers four- and five-day seminars in object-oriented technology, available either in-house or on site.

NetLinks Technology, Inc.
Nashua, N.H.
(603) 891-4177

Offers intensive three-day introduction to distributed object computing using an object request broker.

Object International, Inc.
Austin, Texas
(512) 795-0332

Delivers and develops object-oriented analysis, object-oriented design and object-oriented programming training courses, stressing a hands-on, results-oriented approach.

Open Systems
Alternatives
Cincinnati
(513) 733-5194

Specializes in linear, video-based and satellite instruction in object technology, including C++, object-oriented design, open systems for management and open systems for technical staff.

Palladio Software Corp.
Brookfield, Wis.
(414) 789-5191

Offers object-oriented educational seminars including "Introduction to Object Technology," "Object-oriented Analysis and Design" and "Project Kickstart."

Quality Software Eng.
Beaverton, Ore.
(503) 538-8256

Offers object technology training courses. Stresses goal-directed support after training to ensure languages are being used properly.

Rational
Santa Clara, Calif.
(408) 493-3600

Offers several seminars, on-site workshops, video-based training and custom-designed courses in object-oriented technology.

Skill Dynamics
New York
(212) 230-5369

Offers technical education and training services with public, private and customized object-oriented offerings, both in-house and on site.

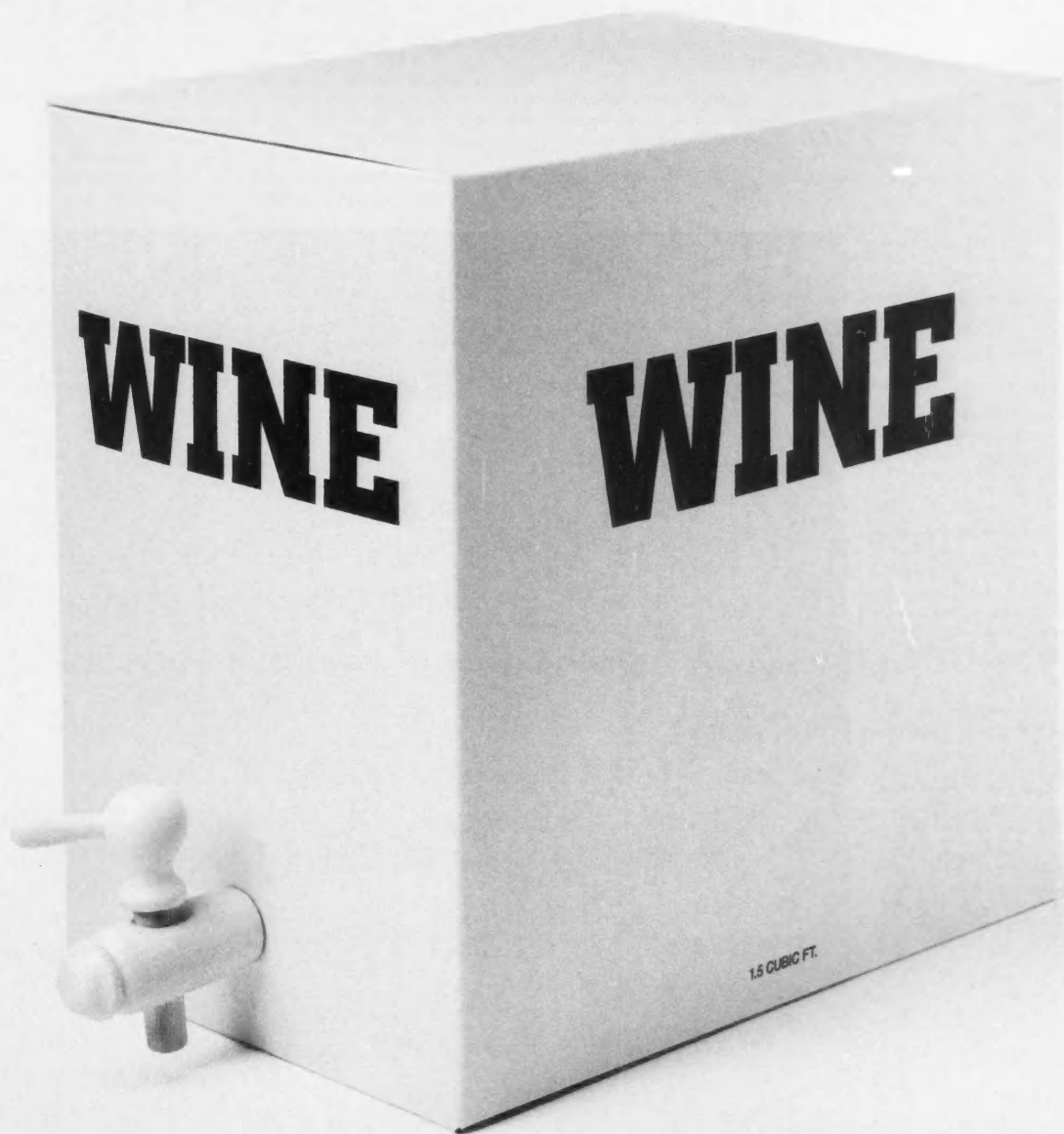
Syrinx Corp.
New York
(212) 229-0320

Offers object technology courses for business/enterprise and technical/development interests.

The Technology
Exchange Co.
Reading, Mass.
(800) 662-4282

Offers four-day workshops in object technology in several major cities, also available on site.

Source: Object Management Group, Framingham, Mass.



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Calendar

MARCH 27-APRIL 2

LAN Security. Washington, March 28-29 — Contact: Computer Security Institute, San Francisco, Calif. (415) 905-2626.

Lap & Palmtop '94. New York, March 29-30 — Focus: Mobile computing. Contact: Laptop Expositions, New York, N.Y. (212) 682-7968.

APRIL 3-9

EDI 2000. Chicago, April 5-6 — Keynotes: Jack Shaw, president, EDI Strategies, Inc. and Don Fuqua, president, Aerospace Industries Association. Contact: EDI 2000, Dallas, Texas (214) 475-1838.

Rocky Mountain Telecommunications Exposition. Denver, April 5-6 — Theme: "Where Communications and Opportunity Meet." Contact: Sheri Prom, Tele-Communications Association, Denver, Colo. (303) 860-6125.

The Annual Computer Storage Exposition & Conference. San Francisco, April 5-7 — Focus: The integration of the mobile office into networked systems and associated issues and products that deal with hierarchical storage management, system archiving and backup. Contact: Sandi Eberhard, Eberhard & Co., New York, N.Y. (212) 486-6186.

The Virtual Reality Forum 1994. New York, April 5-7 — Contact: Virtual Reality Systems, New York, N.Y. (212) 861-0588.

15th Annual Conference on IS Performance/Capacity Management. Phoenix, April 5-8 — Theme: "Economics of the New IS Environment," including topics such as the new economics, financial management, sizing strategies and issues, controlling IS costs, performance/capacity issues and benchmarking. Contact: The Institute for Computer Capacity Management, Phoenix, Ariz. (602) 997-7374.

Midwest Graphics '94. Detroit, April 7-9 — Contact: Graphic Arts Show Co., Reston, Va. (703) 264-7200.

APRIL 10-16

Association of Banyan Users International, Inc. (ABUI) Spring '94 Conference & Exposition. Atlanta, April 10 — Keynotes: "Building and Integrating Applications Using a Messaging Infrastructure" by David Whitten, office of information systems, Gartner Group, Inc.; "Reflections on the Future of Enterprise Networking and Messaging" by David C. Mahoney, CEO, chairman of the board, Banyan Systems, Inc. Contact: ABUI headquarters, Chicago, Ill. (312) 644-6610.

1994 KnowledgeWare International User Conference. Atlanta, April 10-13 — Contact: KnowledgeWare, Inc., Atlanta, Ga. (404) 231-8575.

Crossroads '94. Rancho Mirage, Calif., April 10-13 — Contact: Open Systems Advisors, Boston, Mass. (617) 859-0859.

NetWare User Conference. Providence, R.I., April 11-12 — Contact: Providence NetWare User

Conference, Orem, Utah (800) 755-9898.

1994 National Association of State Information Resource Executives Midyear Summit. Boston, April 11-13 — Contact: NASIRE, (606) 231-1905.

Managing Customer Service. Phoenix, April 11-13 — Focus: What is involved in supporting man-

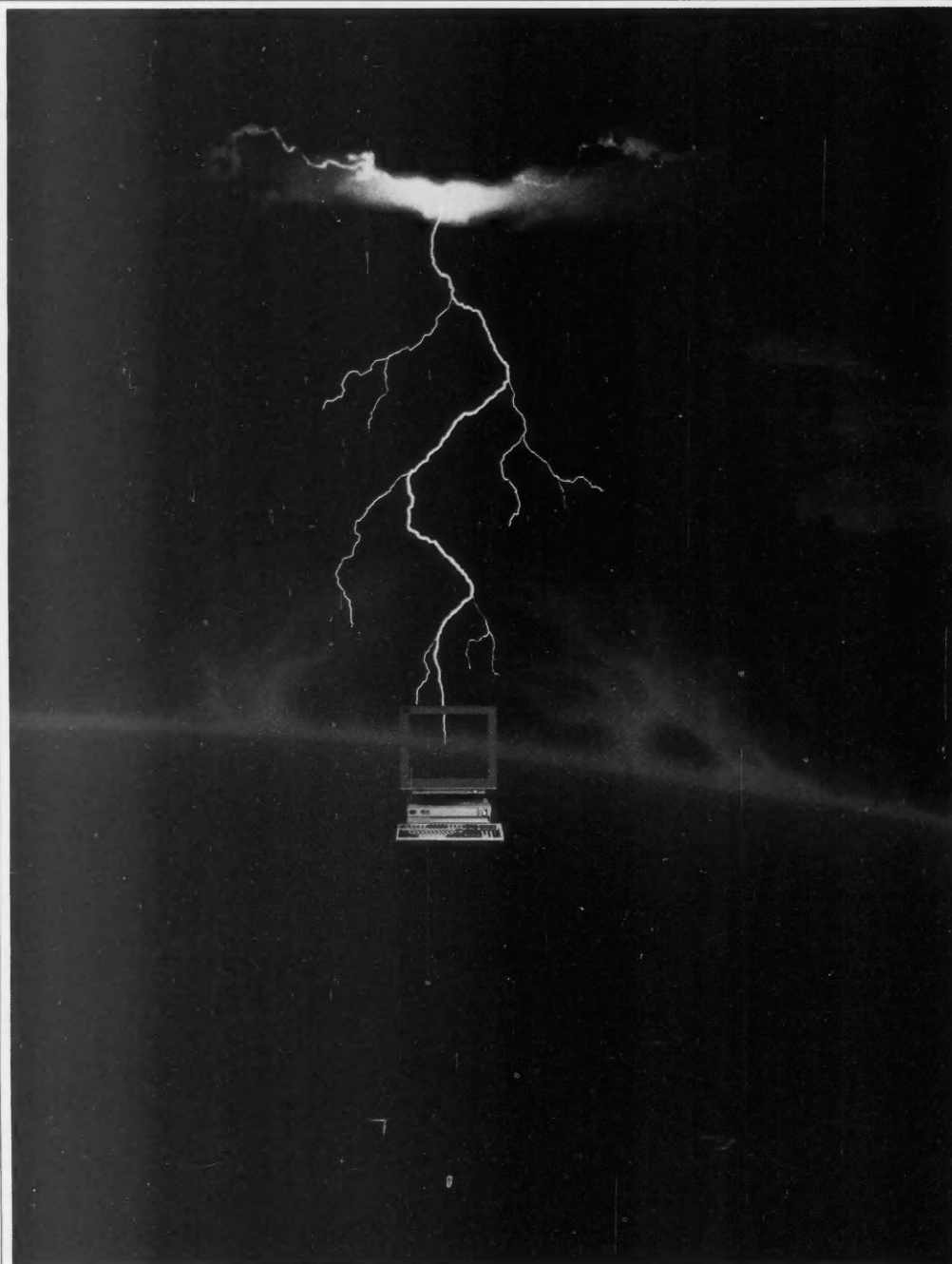
agement procedures, work load descriptions and service level contracts. Contact: The Institute for Computer Capacity Management, Inc., Phoenix, Ariz. (602) 997-7374.

IPC '94 Conference & Exposition. Detroit, April 11-14 — Theme: "People, Partnerships and Technology." Contact: The Engineering Society, Ann Arbor, Mich. (313) 995-4440.

The Sixth Annual National Managed Health Care Congress. Washington, April 11-14 — Theme:

"Realizing the Promise of Managed Care: Using Reform to Revitalize." Contact: The National Managed Health Care Congress, Waltham, Mass. (617) 487-6700.

Global Environmental Excellence Conference. New York, April 12-13 — Focus: Senior executives seeking pragmatic ways to deal with tough environmental, health and safety issues. Keynote: Robert H. Campbell, chairman and CEO of Sun Co., Inc. Contact: Carol Courter, The Conference Board, New York, N.Y. (212) 759-0900.



Management

'94 International Conference & Exhibition on Multichip Modules. Denver, April 13-15 — Sponsors: The Microelectronics Society, The International Electronic Packaging Society, The Electronic Industries Association and Components, Packaging, Manufacturing Technology Society. Contact: International Conference & Exhibition on Multichip Modules, Reston, Va. (703) 758-1060.

International Wireless Communications Expo. Las Vegas, April 13-15 — Focus: Cellular, paging, specialized mobile radio. Contact: *Communi-*

cations Magazine, Englewood, Colo. (303) 220-0600.

International Multimedia Conference. Salt Lake City, April 13-15 — Contact: Steve Cantwell, Allen Communications, Inc., Salt Lake City, Utah (801) 537-7800.

InterGrowth 1994. Scottsdale, Ariz., April 13-16 — Focus: "Acquisitions and Divestitures — Delivering Corporate Growth and Renewal." Contact: Carl Wangman, Association for Corporate

Growth, Glenview, Ill. (708) 689-1331.

APRIL 17-23

SHARE Spring 1994 Meeting. St. Louis, April 17-20 — Contact: SHARE, Chicago, Ill. (312) 822-0832.

Accounting and Cost Allocation for Client/Server Systems. Toronto, April 18-20 — Contact: Technology Transfer Institute, Santa Monica, Calif. (310) 394-8305.

Distributed Computing World. Washington, April 18-21 — Focus: There will be four separate conferences designed for companies in the process of implementing distributed systems. Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

Electronic Messaging '94. Anaheim, Calif., April 18-21 — Focus: E-Mail. Contact: Electronic Mail Association, Alexandria, Va. (703) 524-5550.

ISCA '94: 21st International Symposium on Computer Architecture. Chicago, April 18-21 — Contact: Association for Computing Machinery, New York, N.Y. (212) 889-7440.

Unix Reseller Conference. Dallas, April 18-21 — Keynotes: Charles B. Wang, CEO of Computer Associates International, and Phillip E. White, CEO of Informix Software, Inc. Contact: Expoconsul International, Inc., Princeton, N.J. (609) 987-9400.

Distribution/Computer Expo '94 & Seminar '94. Rosemont, Ill., April 19-20 — Contact: C. S. Report, Uwchland, Pa. (610) 458-6410.

Client/Server Developers' Conference. Washington, April 19-21 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

Networks Expo. San Francisco, April 19-21 — Focus: Networking and computing. Contact: Annie Scully, Bruno Bienenheim, Inc., Fort Lee, N.J. (201) 346-1400.

Re-engineering: The Implementation Perspective. Boston, April 19-21 — A seminar providing an introduction to the concepts and objectives of re-engineering with an analysis of the business factors driving it. Instructor: Michael Hammer of The Center for Re-engineering Leadership. Contact: Hammer and Co., Cambridge, Mass. (617) 354-5555.

Society for Information Management Institutional Members Conference. Ponte Verde, Fla., April 20-22 — Contact: SIM, Chicago, Ill. (312) 644-6610.

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Armed services to hold conference

The Air Force, Army and Navy are joining forces to present STC-94: The Sixth Annual Software Technology Conference, April 10-15, in Salt Lake City.

This is the premier software technology conference in the Department of Defense.

Conference organizers expect to attract 2,500 participants. The conference theme is "Predictable Software: Order Out of Chaos."

Conference topics will include software engineering and management, re-engineering, environments and process improvements.

For information or registration materials, contact Dana Dovenbarger, conference manager, Software Technology Support Center, OO-ALC/TISE, Hill AFB, Utah 84056; telephone (801) 777-7411; fax: (801) 777-8069.

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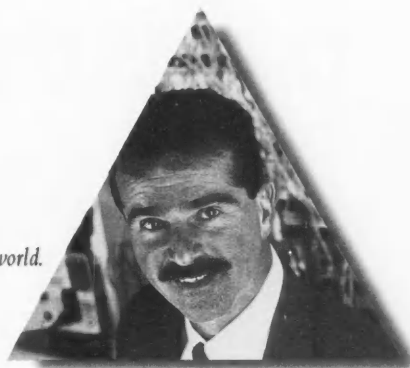


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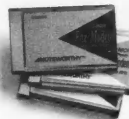


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In Depth

In a MAN'S WORLD

I've always tried to make being a woman a nonissue. I worked hard because I wanted to succeed, not to prove I was better than a man. I never felt I was competing with anyone but myself. And I think the men whose paths I crossed respected, rather than resented, me for it. I'd also like to think that [The ASK Group, Inc.] never got or lost a deal because I was a woman, but that would be naive. I just hope we got more than we lost.

**SANDRA KURTZIG, ASK
GROUP FOUNDER, SAYS
being a woman
IN A MALE-DOMINATED
PROFESSION DOESN'T
HAVE TO BE AN OBSTACLE.**

When I was a student, much of my world was dominated by men. I often found myself one of the few women in the group at UCLA in math and at Stanford in aeronautical engineering. Later, when I was at General Electric Co. and then when I tramped around the country for ASK, most of the people I did business with were men. Sure, by the mid-1970s there were women in business but rarely in the manufacturing area and rarely in the upper reaches of the management I was dealing with. And sure, there were women selling, but more often they were in inside sales, not taking the red-eye to Gary, Ind.

While I was generally successful

at making being a woman a nonissue for myself, I was aware that other women didn't have it as easy. My first face-to-face confrontation with sex discrimination came when I was working for GE. I was one of two professional women in the office. The other one was a former schoolteacher, Mary Ellen Romain. I had no complaint about my own pay — I was making as much as anyone — but Mary Ellen was doing the same work and being paid considerably less because,

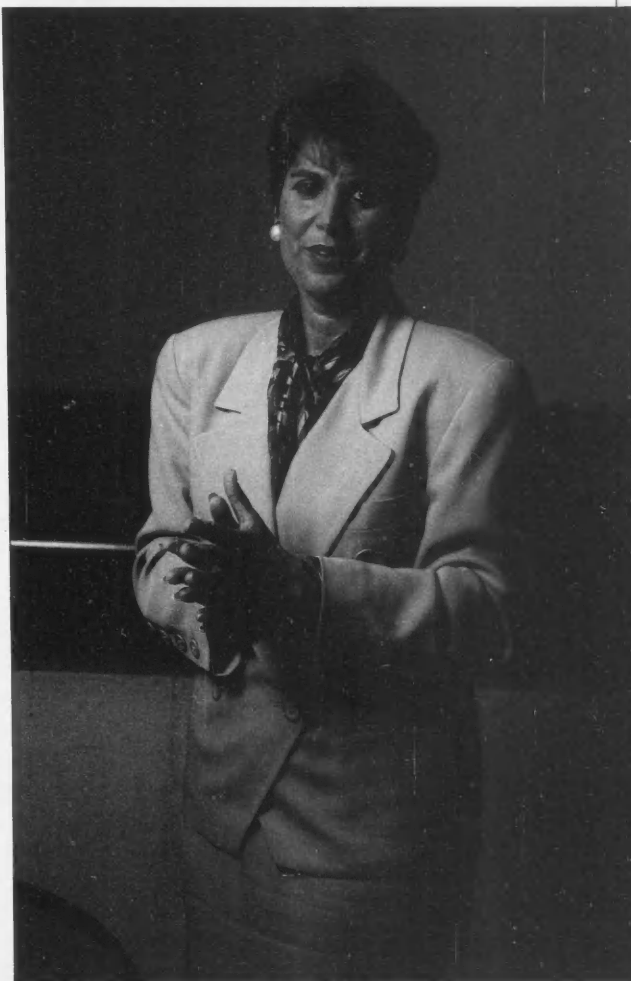
before joining GE, she had been a teacher, a lower-paying, traditionally female-dominated job. It really rankled me. Fortunately, we had an enlightened manager, Dennis Casazza, who bucked the system and gave her raises at a higher percentage than the company's suggested increases until she was

at par with everyone else.

Another experience I had cut the other way. Not long after leaving GE to go into business for myself, I got a call from a woman in a Southern California GE office asking if I had quit the company because I'd been turned down for a two-level promotion and new position I'd been in line for. It was the first time I'd even heard I had been consid-

Man's world, page 117

Excerpt from the forthcoming book *CEO: Building a \$400 Million Company From the Ground Up* by Sandra L. Kurtzig with Tom Parker to be published by the Harvard Business School Press in May 1994. Copyright 1991, 1994 by Sandra L. Kurtzig; all rights reserved.



BEING A WOMAN gave me an advantage, Kurtzig says

BY SANDRA L. KURTZIG

ahead of their
time

just in

THE 1994 PRICE WATERHOUSE COMPUTERWORLD
SMITHSONIAN AWARDS NOMINEES

Few people tap into the very core of their potential to make a significant, positive impact on society. Many try, some get close, but only a few creative champions make a notable difference. In recognition of their achievements, Price Waterhouse has nominated 23 organizations for the prestigious 1994 Computerworld Smithsonian Awards. These awards acknowledge those who are ahead of their time, just in time, creatively applying information technology for the benefit of society.

ACCESS Radiology Corporation
Waltham, Massachusetts

Alameda County Shelter Plus Care
Oakland, California

CableData
Rancho Cordova, California

COTS Shelter
Detroit, Michigan

ConSolve, Inc.
Lexington, Massachusetts

Digital Analysis Corporation (DAC)
Reston, Virginia

DIRECTV/NRTC
El Segundo, California/Herndon, Virginia

DuPont Merck Pharmaceutical Company
Wilmington, Delaware

Johns Hopkins University
Laurel, Maryland

**Learning Independence Through
Computers (LINC)**
Baltimore, Maryland

MCA, Inc.
Universal City, California

Maryland Department of Human Resources
Baltimore, Maryland

Milwaukee County Sheriff's Department
Milwaukee, Wisconsin

National Captioning Institute
Falls Church, Virginia

NationsBank Corporation
Charlotte, North Carolina

PepsiCo Food Systems Worldwide
Dallas, Texas

QUALCOMM Incorporated
San Diego, California

SAIC
San Diego, California

Sears Merchandise Group
Hoffman Estates, Illinois

United Nations
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The World 2000 Project
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Price Waterhouse



For more information on the Computerworld Smithsonian
Awards program, call Karen Webster at 410/350-8270.

Man's world

CONTINUED FROM PAGE 115

ered. She'd also been in line for the promotion, she said, but it had been given to a man. She was convinced it was sex discrimination and asked if I'd join her in a lawsuit against GE. When I turned her down, she was furious. I didn't know all the particulars of the case, though I eventually found out that the guy who got the job was highly qualified, certainly more so than I'd been at the time. Still, the assumption was that I would join with her to slug it out with GE. Like Mary Ellen's poor pay, it rubbed me the wrong way.

Of course, there were many times I *could* have taken a stand: the hundreds of times I was asked or heard, "What's a nice girl like you doing in a business like this?" and "Well, if you'd brought in the pretty girl when we started, we'd already have a deal," or the dozens of passes I deflected. It almost never got to me, though. And I rarely thought that taking a stand would accomplish anything other than alienate people. In fact, in the 70s, if someone called me a pretty girl, I was flattered. I didn't see it as a put-down.

Put-down or not, to most of the inane remarks I smiled and thought, "I'm soon going to have your business and your respect." As for the passes, I usually had a

**"THERE WERE
MANY TIMES
I COULD HAVE
TAKEN A STAND:
the hundreds of
times I was asked,
'What's a nice girl
like you doing in a
business like this?'"**

clever comeback, never cruel, letting the man walk away with dignity. What it usually boiled down to was that after the guys, particularly the roll-up-your-shirt-sleeves manufacturing guys, realized I knew what I was talking about, I gained even more credibility than if I were a man. Once they recognized that I was good at what I did, they figured I was probably better than most men because of all the B.S. I had put up with.

For the most part, I thought that being a woman gave me an advantage in business. If I were competing against four guys, I was the one remembered. In the barrage of phone calls received by an executive, mine was often the one returned.

An example of when being a woman worked for me was the day I was late for a meeting at ASK with Tom [Lavey, vice president of sales,] and a half dozen representatives of an out-of-town company we were pitching. By the time I arrived, everyone was sitting around the small conference table in Tom's office. Before

Tom had a chance to introduce me, one of the guys asked me for a cup of coffee. "I'd be happy to oblige," I said, "but I'm not sure if the coffee would be any good."

At that point Tom introduced me, and the guy got all flustered and apologized. "No, no," I insisted, "I *want* to get your coffee. In fact, if you close the deal right now, I'll get you sugar. Cream? Little cookies? A pen to sign the contract?" The way I saw it, the guy's minor faux pas immediately put us at an advantage. Not

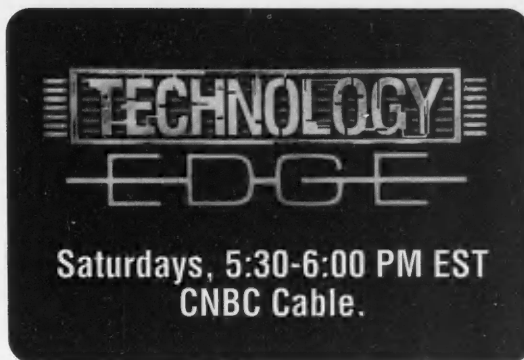
long after, they signed the contract.

Another time I made the identical mistake. Three of us, Marty [Browne, a vice president,] Ken Fox, our vice president of R&D, and I were at a company called Britton Lee that had a database system we were thinking of using. They had just moved into a brand-new building. I was in the president's office, gesturing with a cup of coffee in my hand, when I sloshed most of it onto the wall behind me. Ken and Marty ran to get some paper towels.

Seconds later a woman walked in, leaned over and said something to the president. I held up my empty cup and asked for a refill. It turned out she was the vice president of sales and marketing; I was quite embarrassed. We didn't use Britton Lee's system, however. ■

Kurtzig is the founder of The ASK Group, which includes ASK, Ingres and Data 3. She stepped down as chairman in September 1993 to pursue other interests.

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Computer Careers

MAXIMIZE teamwork

If you have experience working on a team, promote it to the hilt. It's a hot skill to have.

By Joe Panepinto

WHETHER YOU HAVE WORKED ON AN entirely self-directed work team or a number of project-specific ones, one thing is certain — teamwork looks good on your resume.

"Teams are hot," says Jessica Lipnack, a consultant at The Networking Institute, Inc. in Newton, Mass. "Anyone with good team experience who can talk about it intelligently is going to have employers all over them."

Talking intelligently about team experience means promoting team-specific skills, particularly interpersonal, management and leadership skills. Not only do information systems people who have worked on teams learn to budget, take charge and generate consensus, they also work more closely with their customers — a key element of client/server development work.

On the technical side, Madeline Weiss, principal at Weiss and Associates in Bethesda, Md., has noticed that self-directed team members are more willing to take risks. The team acts as a safety net that allows the individual to explore new technical areas.

Scott Fyfe, an IS analyst at Armstrong World Industries in Lancaster, Pa., grad-

uated from college and went straight into an eight-member self-directed work team. He says his team experience has afforded him not only a "whole host of soft-side skills" but also an opportunity to explore new technologies.

Getting involved

Fyfe came armed with traditional Cobol and hierarchical database skills, but picking brains and getting involved in projects has earned him enough PC and Windows skills to participate in client/server development.

"I think of the typical junior-level IS guy as getting locked in the closet somewhere while someone senior feeds him requirements, and he codes it," Fyfe says. "In four or five years, that guy might come out and meet a customer or someone from another department."

Another area of teamwork worth talking up is interfacing with other departments. While project-oriented teams are

usually cross-functional and self-directed, and work teams are organized around a specific business process, both provide exposure to departments, requirements and experiences outside those found in traditional IS organizations. "Being on a team is an enormous career opportunity," Lipnack says. "It usually means you're going to meet people from other organizations or departments."

Roy Rezac, vice president of software engineering at Symbiotics, Inc. in Cambridge, Mass., worked on dozens of project-specific work teams while an engineer at Digital Equipment Corp. To

Rezac, success is judged on the project's use to the customer. So if you've worked on a team, you can say you've really worked for the customer, not some middle-level manager.

Team communication

"In the traditional situation, the manager holds in her head the whole picture of whatever the task or project is and then parcels out the pieces," says Lisa Kimball, a partner at Metasystems Design Group, Inc., a consultancy in Arlington, Va. "When you move into a team situation, each member needs to know what the whole project is."

To accomplish this, each team member has at least two roles: Initiator and point person on a particular technology or process and support person to one or more team members, says John Manzo, vice president of engineering at Pitney Bowes, Inc. in Stamford, Conn.

Yet despite the skills teamwork engenders, there is one acknowledged career-related obstacle: ISers who have tasted the freedom of working on teams don't want to go back to old-style hierarchical management. And that can be limiting.

"The only way I'd leave here is to go somewhere as a team facilitator or team leader," says Jim Petro, a 20-year IS veteran who has spent the past five years as a member of a self-directed work team at LTV Steel Corp. in Cleveland.

"The only other thing I might like to do is work with a regular IS group and try to organize them into a self-directed work group," he says.

Panepinto is a free-lance writer in Amherst, Mass.

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LET'S MAKE A DEAL

NEGOTIATING FOR GOOD SERVICE AND FAIR PRICES CAN BE INTIMIDATING AT FIRST, BUT SEASONED BUYERS SAY YOU CAN SMOOTH THE PROCUREMENT PROCESS. HERE'S HOW.

By Michelle Louzoun

"Never let them see you sweat" may sound like a deodorant commercial, but those are words to live by for people who have been wheeling and dealing for years.

Information systems professionals agree that savvy procurement is mandatory at almost all management levels, but it's a skill that does not always come easily.

"Without the right products, we wouldn't be competitive," says Jack Purdy, IS manager at New United Motor in Fremont, Calif. Make the wrong buys and your career will be short.

When it comes to purchasing technology, pitfalls and horror stories abound. ABCO Refrigeration Supply Corp. in New York bought distribution software from a local subsidiary of a reputable company. Installation was supposed to take three to four months, but 2½ years later, the vendor was still there and still billing for each day's work.

To make matters worse, portions of the system were defective. "Their system would jump over some records and lock you out of others," says John Hennessey, ABCO's IS director.

Virtual package

As it turned out, the vendor sold a package that did not exist. The vendor's consultants were actually writing an order-entry and inventory system while they were supposedly installing the package. "Those 2½ years were a rough period," Hennessey says. However, Hennessey agrees it was a situation that could have been avoided had he asked the right questions.

Before buying the package, the vendor showed Hennessey a demo; but if he had asked to see the source code, Hennessey would have known the program did not exist. In fact, Hennessey suggests asking for the source code outright. "If you keep it, you can alter the program yourself," he says.

In addition to asking the right questions, a novice buyer should avoid letting the product research process drag on, says Bob Miller, IS director at Semiconductor Systems, Inc. in Fremont, Calif.

There is a learning process associated

with interviewing vendors. No matter what, you are going to have to go back to the vendor more than once to ask questions. Miller's advice is to keep initial interviews with vendors short, fine-tune requirements and then ask your final questions. If you let your first sessions with vendors run too long, your requirements will have changed by the time you are finished. "I've done it both ways," Miller says, "and I can tell you that the first approach is definitely faster."

Miller estimates that research time for new equipment varies from two weeks for everyday products such as PCs to six weeks for products purchased less often.

But even if you get past the evaluation, the contract itself may trip you up.

James Mehaffey, vice president of IS at Blue Cross/Blue Shield of Louisiana in Baton Rouge,

learned this firsthand. While renegotiating a contract for software purchased in 1974, the negotiations team learned that the original contract had a stipulation requiring the software be used "at an address from which we had moved in 1982," Mehaffey says. When the vendor was contacted, Mehaffey was told the company had to relicense the product. "It would have cost us \$20,000 to \$30,000. So we ended up writing something ourselves."

Since contracts are such sticky pieces of legal work, Hennessey suggests you make sure your lawyer is well-versed in computer law, which changes daily. In turn, Mehaffey says you should learn about contracts from training courses. This way, you can double-check the contract yourself.

Louzoun is a free-lance writer in New York.

6 MISTAKES YOU'RE BOUND TO MAKE

Committing to unrealistic deadlines: Be realistic about what you can accomplish. If you're uncertain about how long it will take to procure equipment, do some research, but never keep your manager waiting more than a day or two.

Factoring the salesperson into the decision: Don't bother assessing your compatibility with your salesperson. Once a deal is made, accounts are usually turned over to customer service and you never see the salesperson again.

Buying only brand names: You may think you're playing it safe with brand names, but in many cases lesser-known manufacturers offer more economical solutions.

Flying solo: Being responsible for a purchase does not mean shouldering the decision by yourself. Instead, tap prospective users and other IS staff for their thoughts.

Ignoring post-sale follow-up: Call the vendor to make sure goals such as delivery dates are still achievable. Otherwise, you may not hear about the glitches until it is too late.

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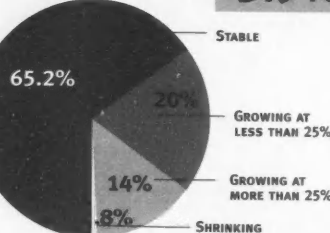
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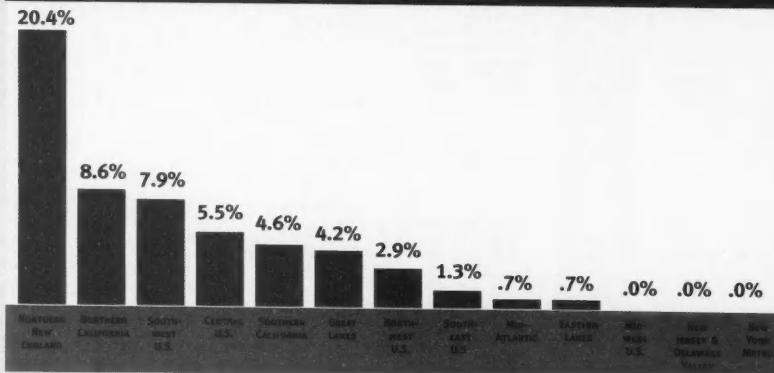
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Marketplace



By Bronwyn Fryer

Hubs come in just about every shape, size and configuration, so the search for one is largely a matter of finding a hub that best suits your needs. While some experts consider them a commodity, not all hubs are created equal. According to buyers, small product differences can become significant issues after installation. While we can't cover everything you need to know about buying a hub, the following questions will get you started.

How flexible is it? The more variables in your environment, the more flexible the hub should be. Those variables include network backbone, the number of protocols running and whether the hub is for a branch office or a large corporate site. Other considerations include the general mobility level of workers, distribution and wiring distance among floors or buildings, network traffic patterns and required network management capabilities.

What is the cost per port? If you plan to add dozens or hundreds of new nodes in a short time, hubs can become costly. Some data center or basement-type hubs can run as high as \$2,500 per Ethernet port, while fixed-port hubs can cost \$50 or less per Ethernet port. David Strom, a network consultant in Port Washington, N.Y., suggests this formula: Divide the total price of the solution, including support for additional segments, software and so forth, by the number of end-user ports, including the number you expect to add in the next several months.

What are the product's limitations? Have the vendor

hip hubs

8 questions to ask before you buy

show you all technical specifications as well as the installation guide, then look carefully for any cautions and restrictions. In addition to testing the hub for performance, such as running a maximum amount of traffic through the hub for 90 days, it is a good idea to test any feature that sounds particularly appealing.

Is it fault-tolerant? Fault tolerance is critical. Experts suggest finding a product with a built-in redundant power supply, as well as a swappable backplane to provide an extra measure of security. But beware of vendor promises. "Make sure you don't buy anything that will

overload the power supply," warns William Stewart, senior network engineer at NEC Electronics, Inc. in Mountain View, Calif.

Will it grow with me? Find out if the hub supports multiple technologies simultaneously, has a sensible upgrade path and allows segments to be added without much difficulty. "If you want to add non-copper twisted backbone modules, will it let you do that easily?" Strom asks.

Is the design stable? Do not underestimate the importance of a well-thought-out physical design, says Paul Dover, manager of communications services at Sprint/United Telephone of Florida in

Winter Park. Hubs tend to be kept in dark, hot, crowded, airless wiring closets, so the product should work well under such conditions. Look for one that is stable, with secure connections and easy-to-read indicators.

In addition, the chassis should be solidly built to avoid bowing when heavy monitors or other equipment are placed on top of it. The gap between cards should also be generous enough to make sliding them in and out easy. "Because hubs are a technical product, we tend to overcomplicate any problems that occur with them," Dover says. "But 99% of the problems are physical, not technical."

Is the management software easy to use? Well-designed, easy-to-use management software deserves serious consideration. Look for software that provides a graphical user interface for novice users and allows network monitoring and troubleshooting from the desktop. "Some vendors are good at building a hub, but their management software is a nightmare," says Tim Roche, an IS specialist at the Chicago branch of the Industrial Bank of Japan. "If the interface is Greek, and you're in

an emergency situation, you won't be able to get the system back up quickly."

How flexible is the vendor? The vendor should be willing to sweeten the deal by offering trade-ins on older equipment. For instance, Dan Patton, a network manager at Beaumont Hospital in Royal Oak, Mich., managed to get a straight swap on some of his equipment. Also, when dealing direct, Stewart recommends finding a vendor that will send a new part without first requiring that the faulty part be sent back.

Fryer is a free-lance writer in Menlo Park, Calif.

WHICH HUB TO CHOOSE?

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Large number of users				
Small number of users				
Data center site				
Single wiring closet				
Multiple technology support				
Single technology support				
Infrequent hub location moves				
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Source: Richard Redelfs, Director, America's Hub Marketing, 3Com Corp., Santa Clara, Calif.

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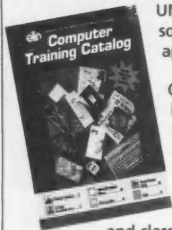


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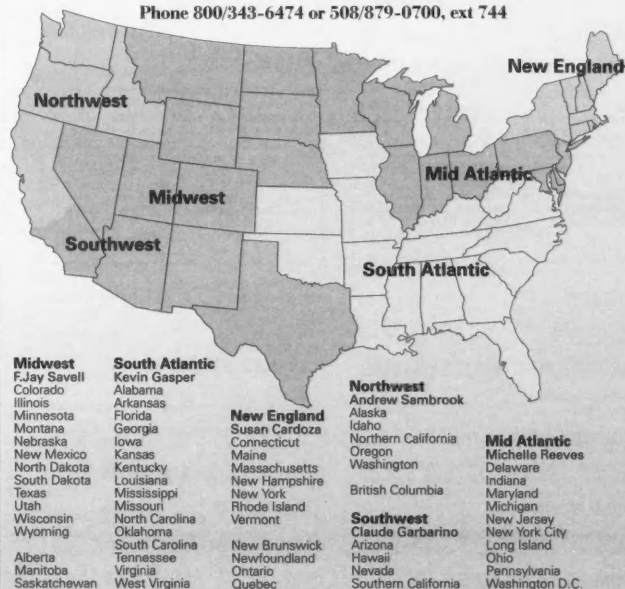
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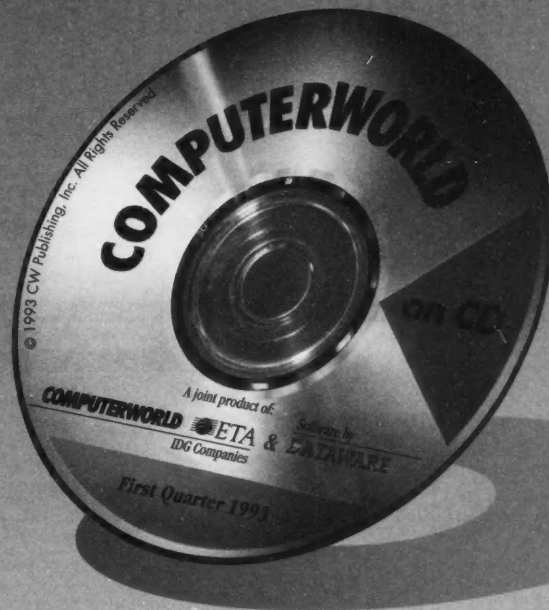
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		Systems Strategies, Inc.	80
		Systems Union, Inc.	65
		T	
		Tech Data Corp.	72
		TelePad Corp.	91
		Tencor Instruments, Inc.	10
		The Santa Cruz Operation	64
		The Tower Group	85
		The Turner Corp.	47
		Tivoli Systems, Inc.	12
		Tower Technology Corp.	97
		Towers Perrin	77
		Transaction Network Services, Inc.	38
		TransAmerica Financial Services	4
		Transarc Corp.	12
		U	
		UBS Securities, Inc.	15
		Uniface Corp.	15,92
		Unisys Corp.	64
		Unix System Laboratories, Inc.	28
		Unterberg Harris	38
		USTRavel	16
		V	
		Value Health, Inc.	77
		Vista Concepts, Inc.	38
		Visual Edge Software Ltd.	97
		W	
		Waverly, Inc.	1
		Weather Channel	12
		Weitek Corp.	47
		Wellfleet Communications, Inc.	77,85
		Wells Fargo Bank	1
		Westcon, Inc.	72
		Whirlpool Corp.	6
		WordPerfect Corp.	1,64,138
		Worldport LA	1
		Worldwide Systems Corp.	57
		Wyse Technology, Inc.	57
		X	
		X/Open Co.	4
		Xerox Corp.	16
		Z	
		Zenith Data Systems Corp.	47
		Zydacron, Inc.	16

Friday Stock Ticker

Gainers

Losers

Percent

ALDS CORP.	37.0	4TH DIMENSION(L)	-21.8
SOFTWARE TOOLWORKS INC.	30.1	ASE COMPUTER SYSTEMS(L)	-14.3
ADVANCED LOGIC RESEARCH(H)	25.6	FIBRONIX INT'L INC.(L)	-14.3
TELEBIT CORP.	22.4	TWCORP SYSTEMS	-14.3
COMPUFARM CORP.	20.4	GATEWAY 2000 INC.	-10.6
COSINTRONICS CORP.	18.8	COMPUTER TASK GROUP	-10.1
MICROCOM INC.	18.6	DATARAM CORP.(L)	-9.1
INTELLIGENT INFO. SYSTEMS	17.5	TRINICORP.	-7.9

Dollar

ALDS CORP.	9.25	USROBOTICS	-3.00
LOTUS DEVELOPMENT(H)	8.50	TWCORP SYSTEMS	-2.50
COMPUFARM CORP.	7.25	GATEWAY 2000 INC.	-2.38
POWERSOFT	6.00	4TH DIMENSION(L)	-2.38
3 COM CORP.	5.75	ADDON SYSTEMS INC.	-2.13
PEOPLESOFT	5.50	AUTODESK INC.	-2.13
WELLFLEET COMMUNICATIONS(H)	5.00	CREATIVE TECHNOLOGIES INC.	-1.50
ZLOG INC.	4.00	SEI CORP.	-1.50

NEWS OF ADOBE SYSTEMS, INC.'S INTENDED BUYOUT OF ALDS CORP. DROVE ALDS SHARES UP LAST WEEK, WHILE ADOBE'S STOCK FELL. LOTUS DEVELOPMENT CORP. CONTINUED TO SOAR AS THE COMPANY ANNOUNCED NEW SERVICE INITIATIVES AND MOVED FORWARD WITH PLANS FOR PUBLIC NOTES SERVICES.

Novell back in favor

After half a year of frowns, Wall Street is once again smiling on network operating system provider Novell, Inc. (NOVL).

Novell beat analysts' expectations in its first fiscal quarter this year (ended Jan. 31) by posting earnings of 23 cents per share, just above consensus expectations.

The Orem, Utah, company also earned improved investment ratings from S. G. Warburg & Co. and Alex. Brown & Sons, Inc.

S. G. Warburg analyst David Wu noted several improvements in Novell's fundamentals and raised his recommendation on Novell stock from an Add to a Buy. Wu said there are indications that the company's European business is on the mend. He also said Novell made surprising progress in cutting its days receivable outstanding by 10 days.

Mary McCaffrey and Karen Gage, analysts at Alex. Brown, said they expect one more quarter of flat earnings but nevertheless bumped up their rating to a Strong Buy. The analysts pointed to Novell's improved gross margins and operating margins as additional positive indicators.

McCaffrey and Gage said they expect Novell shares to hit a target price in the 31 to 34 range over the next six months to a year. Wu was slightly more conservative, establishing a target price of 27 to 30 for that time frame.

However, one of the question marks for analysts is the delivery date for the next upgrade of NetWare 4.x. Until Novell ships the next iteration of its high-end flagship product, revenue growth will likely remain slow, according to the Alex. Brown analysts.

—Derek Slater

Check this out

Novell suffered flat earnings in the second half of fiscal 1993 (The company's fiscal year ends Oct. 31.)

Earnings per share			
FISCAL QUARTER	1992	1993	1994
First quarter	\$.17	\$.23	\$.23
Second quarter	\$.20	\$.26	NA*
Third quarter	\$.21	\$.20	NA*
Fourth quarter	\$.23	\$.22	NA*

*Not applicable

EXCH 52-WEEK RANGE

Mar. 18/94 Net Wt Pct 3PM CHANGE CHANGE

Communications and Network Services UP 2.46%

OTC 63.25 19.63 3 COM CORP.	62.50 5.88 10.4
NYS 45.56 35.50 AMERITECH CORP.	40.88 -0.11 -0.3
NYS 65.00 50.75 AT&T	53.50 2.38 4.6
OTC 26.50 12.03 BANYAN SYSTEMS INC.	15.00 1.00 7.1
NYS 49.13 50.75 BELL ATLANTA CORP.	52.25 -0.38 0.7
NYS 63.88 50.63 BELL SOUTH CORP.	55.00 0.38 0.7
NYS 19.63 4.25 BOLT, BERANEK & NEWMAN	19.63 3.13 18.9
OTC 15.75 9.50 BROOKTRUST TECHNOLOGY	15.00 0.25 1.7
NYS 132.50 79.50 CABLATION SYSTEMS	128.63 -1.63 1.2
OTC 43.00 14.50 CENTIGRAM COMMUNICATIONS	40.75 -0.25 -0.6
OTC 58.50 27.50 CHIPCOM CORP. (H)	58.00 0.75 1.3
OTC 81.50 38.75 CISCO SYSTEMS INC. (H)	78.75 -0.75 -0.9
OTC 18.38 8.00 COMPRESSION LABS INC.	12.63 -0.38 -2.9
OTC 36.00 13.25 CROSSCOM INC.	15.00 0.50 3.4
OTC 4.38 1.50 DATA SWITCH CORP.	0.25 0.11 1.1
OTC 7.50 2.25 DIGITAL SYSTEMS INT'L INC. (L)	2.75 0.19 7.3
OTC 73.13 24.25 DSC COMMUNICATIONS	55.13 0.50 0.9
OTC 8.25 2.88 FIBRONIX INT'L INC.	8.63 -0.63 -7.9
OTC 3.63 0.81 GANDOLF TECHNOLOGIES INC.	1.25 0.19 17.6
OTC 17.25 8.00 GENERAL DATA COMM. INDUS.	16.75 0.75 4.7
OTC 1.63 0.09 GATEWAY COMMUNICATIONS	0.81 -0.13 -13.3
NYS 17.25 8.00 GENERAL DATA COMM. INDUS.	16.75 0.75 4.7
ASE 3.13 2.00 GO VIDEO	2.25 -0.06 -2.7
NYS 39.88 31.13 GTE CORP. (L)	32.00 0.13 0.4
NYS 95.97 70.75 ITC CORP.	86.13 -0.25 -0.3
OTC 29.88 21.44 MCI COMMUNICATIONS CORP.	25.25 0.38 1.5
OTC 6.75 1.50 MICROCOM INC.	6.75 1.38 25.6
OTC 8.25 3.50 NEXTER CORP.	6.50 0.25 4.0
OTC 13.00 6.00 NETWORK EQUIPMENT DEVICES	7.50 0.63 9.1
NYS 11.33 5.38 NETWORK COMPUTING TECH.	8.00 -0.25 -3.0
OTC 23.38 8.00 NETWORK GENERAL	22.13 0.75 3.5
OTC 10.63 4.88 NETWORK SYSTEMS CORP.	9.75 -0.25 -2.7
OTC 73.88 26.94 NEWBRIDGE NETWORKS CORP.	62.00 1.50 2.5
NYS 43.63 21.38 NORTHERN TELECOM LTD.	30.38 0.13 0.4
OTC 34.25 17.00 NOVO INC.	30.00 2.50 8.3
NYS 48.88 35.75 NYNEX CORP.	36.63 0.38 1.0
OTC 30.00 19.00 OCTEL COMMUNICATIONS CORP.	28.13 1.38 5.1
OTC 18.25 8.75 OPTICAL DATA SYSTEMS INC.	14.00 0.75 5.7
OTC 7.50 3.75 PENRIL DATA COMM NETWORKS (H)	6.88 -0.13 -1.8
OTC 27.25 13.50 PICTURETEL CORP.	14.25 -0.25 -1.7
OTC 8.25 3.63 PROTEON INC.	6.88 -0.13 -1.8
NYS 38.88 21.13 SCIENTIFIC ATLANTA INC.	31.38 0.00 0.0
NYS 47.00 35.75 SOUTHWESTERN BELL CORP.	40.50 -0.25 -0.6
NYS 40.25 29.50 SPRINT CORP.	32.75 1.38 4.2
OTC 26.75 12.50 STANDARD MICROSYSTEMS CORP.	18.63 0.88 4.9
OTC 19.75 10.50 STRATACOM INC.	17.25 1.75 12.6
OTC 42.25 20.00 SYNOPTICS COMMUNICATIONS	25.38 0.63 2.5
NYS 40.25 29.50 SYNOPTICS COMMUNICATIONS	14.50 2.25 18.2
OTC 46.00 18.25 US ROBOTICS	40.50 -3.50 -8.0
OTC 55.75 38.88 US WEST INC. (L)	39.38 -0.38 -0.9
OTC 86.00 36.75 WELLSFLEET COMMUNICATIONS (H)	86.00 3.75 4.6
OTC 28.25 7.25 XIRCOM	26.75 2.00 8.1
OTC 30.00 15.25 XYPLEX INC.	18.25 -0.75 -3.9

EXCH 52-WEEK RANGE

Mar. 18/94 Net Wt Pct 3PM CHANGE CHANGE

Semiconductors UP 2.93%

NYS 32.88 16.75 ADVANCED MICRO DEVICES	29.75 1.38 4.8
NYS 31.13 17.13 ANALOG DEVICES INC. (H)	29.63 0.25 0.9
OTC 49.63 16.75 ATMEL CORP.	48.88 1.75 3.7
OTC 50.25 29.50 CHIPS AND TECHNOLOGIES	45.38 0.13 0.8
OTC 44.63 13.00 CIRRUS LOGIC	36.63 0.88 2.4
NYS 19.88 9.38 CYPRESS SEMICONDUCTOR CORP. (H)	19.00 -0.25 -1.3
NYS 19.38 10.75 DALLAS SEMICONDUCTOR (H)	19.31 1.13 6.2
OTC 74.50 14.25 INTEL CORP.	71.75 2.75 4.0
NYS 22.25 10.50 LSI LOGIC CORP. (H)	22.25 1.00 4.7
OTC 76.75 12.25 LATTICE SEMICONDUCTOR CORP.	76.75 1.75 10.4
NYS 19.38 9.38 MICRON TECHNOLOGY (H)	87.75 3.75 4.5
NYS 109.63 61.13 MOTOROLA INC. (H)	108.25 2.00 1.9
NYS 24.38 12.00 NATIONAL SEMICONDUCTOR	23.50 0.88 3.9
OTC 6.50 SIERA SEMICONDUCTOR	8.88 0.00 0.0
NYS 88.50 51.63 TEXAS INSTRUMENTS (H)	86.13 -0.13 -0.1
OTC 18.88 6.50 TSI TECHNOLOGY	15.13 -0.63 -4.0
OTC 5.13 WALTER	8.50 0.13 1.4
ASE 19.88 3.63 WESTERN DIGITAL CORP. (H)	19.88 1.75 9.7
OTC 58.00 29.75 XILINX	55.75 1.50 2.8
OTC 40.75 21.50 ZLOG INC.	36.50 3.50 10.6

EXCH 52-WEEK RANGE

Mar. 18/94 Net Wt Pct 3PM CHANGE CHANGE

Peripherals and Subsystems UP 2.99%

OTC 28.63 12.25 AMERICAN POWER CONVERSION	28.63 2.13 8.0
OTC 24.75 15.50 BANCORP INC.	23.50 -0.25 -1.1
OTC 12.00 3.50 CAMBER CORP.	12.00 0.00 0.0
ASE 8.63 3.88 COSINTRONICS CORP.	4.50 0.50 12.5
NYS 20.50 9.00 CONNER PERIPHERALS	18.88 -0.25 -1.3
OTC 17.50 CREATIVE TECHNOLOGIES INC.	8.88 0.00 0.0
OTC 25.00 6.50 DATA RACE INC.	8.88 0.00 0.0
ASE 11.63 5.25 DATARAM CORP. (L)	5.25 -0.25 -4.5
NYS 22.50 5.69 EMC CORP.	22.50 1.88 9.1
OTC 12.50 5.63 EMULEX CORP.	12.50 0.00 0.0
OTC 21.00 14.25 EVANS & SUTHERLAND	18.50 0.75 4.2
OTC 22.25 7.50 EXABYTE	21.75 0.63 3.0
OTC 5.13 2.25 INTELLIGENT INFO. SYSTEMS (L)	8.75 0.88 11.1
OTC 5.75 5.75 IPI SYSTEMS INC.	7.88 0.88 12.5
OTC 28.50 13.75 KODAK INC.	25.75 0.00 0.0
OTC 8.75 4.38 MAXTOR CORP.	7.50 -0.25 -3.2
OTC 8.13 4.88 MICROPLUS CORP.	7.63 0.38 5.2
OTC 11.00 10.50 MINITAB CORP.	19.38 0.88 4.6
OTC 9.50 6.25 PRINTRONIX INC.	8.63 0.38 7.8
OTC 17.25 7.50 QMS INC.	9.38 0.38 4.2
OTC 20.25 9.38 QUANTUM CORP.	18.88 0.00 0.0
OTC 9.13 3.13 RADIUS INC.	8.63 1.00 13.1
OTC 17.75 11.75 RECOGNITION INTERNATIONAL	12.38 -0.63 -4.8
OTC 6.88 3.63 REASON INC.	6.50 -0.38 -5.8
OTC 28.75 13.13 SECURE TECHNOLOGY	28.38 0.50 1.9
NYS 45.00 21.75 STORAGE TECHNOLOGY	37.75 -1.75 -4.4
NYS 29.88 21.38 TETRONIX INC.	29.88 3.38 11.2
NYS 103.75 69.88 XEROX CORP.	99.50 -0.63 -0.6

EXCH 52-WEEK RANGE

Mar. 18/94 Net Wt Pct 3PM CHANGE CHANGE

Services UP 1.14%

OTC 23.75 14.88 AMERICAN MGMT. SYSTEMS	20.50 0.63 3.1
NYS 4.25 2.38 ANACOMP INC.	3.75 -0.13 -3.2
OTC 23.75 14.50 ANALYSTS INC.	15.75 0.25 1.6
NYS 56.88 46.88 AUTO DATA PROCESSING	54.75 1.13 2.1
NYS 24.25 13.00 CERIDIAN CORP. (H)	24.25 1.75 7.8
OTC 24.25 13.88 COMSEC INC.	22.25 0.38 1.7
OTC 17.00 6.84 COMPUTER HORIZONS	17.00 2.00 13.3
NYS 41.75 23.34 COMPUTER SCIENCES (H)	39.38 0.88 2.3
NYS 8.75 6.00 COMPUTER TASK GROUP	7.75 -0.88 -10.1
NYS 35.00 17.38 COMPUISA INC.	21.38 0.88 4.3
OTC 18.00 8.75 CONTROL DATA SYSTEMS INC.	9.50 0.25 2.7
OTC 16.00 7.00 CORPORATE SOFTWARE	9.75 0.25 2.6
OTC 11.00 6.75 EGGHEAD DISCOUNT SOFTWARE	9.75 0.25 2.6
NYS 24.25 26.00 GENERAL MOTORS (E) EDS	33.63 -0.13 -0.4
OTC 22.75 12.75 INACOM CORP.	19.00 -0.25 -1.3
OTC 18.00 11.00 INTELLIGENT ELECTRONICS	26.25 0.50 1.9
OTC 22.13 9.75 MERISEL (H)	21.63 -0.13 -0.6
OTC 31.75 8.00 MICROAGE INC. (H)	31.75 1.75 5.8
OTC 45.00 23.84 MICROCOM SYSTEMS	37.75 1.13 3.0
NYS 87.25 21.63 POLICY MANAGEMENT SYS.	37.25 0.88 2.4
NYS 24.88 16.00 REYNOLDS & REYNOLDS (H)	23.75 -0.13 -0.5
OTC 28.50 13.63 SHARED MEDICAL SYSTEMS (H)	28.50 1.38 5.6
OTC 29.00 17.50 SHARED MEDICAL SYSTEMS (H)	28.75 0.63 2.0
OTC 12.63 5.63 SHI SYSTEMHOUSE	7.63 -0.38 -4.7
OTC 30.75 15.13 SHI SYSTEMHOUSE	28.75 1.13 4.4
OTC 42.75 28.00 SINGARD DATA SYSTEMS	39.25 -0.25 -0.6

KEY: (H) = NEW ANNUAL HIGH REACHED IN PERIOD (L) = NEW ANNUAL LOW REACHED IN PERIOD

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Wysiwyg

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Imbach Consultation, Pasadena, Md.

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government is and decide to get out.

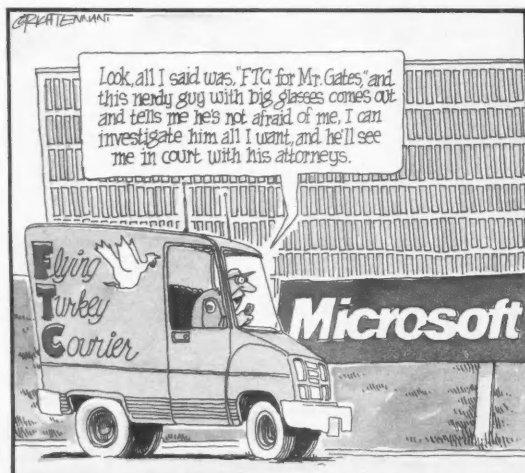
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He can clean up all the problems left behind.

Bret Reed, senior analyst, Micronomics, Inc., Los Angeles

— Wysiwyg compiled
by Lory Dix; illustration
by Robert Neubecker

To what sport would you most liken the information technology industry and why? Let us know what you think (preferably humorously). Contact Lory Dix at (800) 343-6474 ext. 236 or CompuServe 76537.2413. If we use your idea, we'll send you a gift (but please leave a contact number).

The 5th Wave by Rich Tennant



Inside Lines

WordPerfect targets Adobe Acrobat

WordPerfect will announce software targeted at Adobe Systems' Acrobat tomorrow. Code-named Envoy, the \$189 package lets users view documents in the format in which they were created — whether or not the user has the application. Unlike Acrobat, Envoy includes a runtime version that lets recipients without an Envoy license view documents. It is compatible with leading LAN E-mail systems, according to WordPerfect.

Microsoft bridges connectivity gap

Microsoft plans to announce a deal with Information Builders this week that will give Microsoft SQL Server users access to other back-end databases through Information Builders' gateways. SQL Server has been criticized for a lack of connectivity to databases other than its Sybase cousin.

Not so universal

The next version of Microsoft's Mail has no chance of being the "universal" client it was positioned to be, a beta tester claims. Microsoft Mail 4.0, which is part of the forthcoming Touchdown messaging line [CW, March 7], is missing the code needed to access Lotus' Notes and Novell's Message Handling Service (MHS) message and back-end services, the source said. It is highly unlikely that Microsoft will be able to add Notes and MHS before Mail 4.0 ships in the second half of the year, the source added.

The behemoth roars

The "King of Printer Hill" is about to give challengers a higher target to hit. Hewlett-Packard is prepping its next LaserJet for a May debut, sources say, and this time it aims to improve its mediocre print speed. After being mired at 8 page/min. for at least three generations, HP's LaserJet V will check in at 11 page/min.

Novell to add support for NetWare

Contrary to recent press reports, Novell is not withdrawing direct support for NetWare, its on-line CompuServe user forum. Indeed, Novell plans to make its own technical people more accessible to the "sysops," or technically adept users who respond to user complaints and problems posted on the forum, a spokesman said. Novell recently put out a request for forum members who want to become sysops in a plan to boost the total number from 15 to perhaps 30. The vendor was deluged with 600 responses.

Amdahl to steal spotlight

Amdahl plans to steal a bit of the spotlight from IBM's upcoming April 8 mainframe announcement by issuing its "response" next week. International Data Corp. expects Amdahl to match IBM's promised 10-way ES/9000 and perhaps add a 12-way system as well. Amdahl has also struck up a partnership with Oracle. Hitachi Data Systems will not be so quick on the draw with its response to the IBM rollout but eventually is expected to boost its eight-way performance to the same range as IBM's 10-way machine.

ASK and CA may not receive...

Rumors have swirled that Computer Associates wants to gobble up ASK to boost its presence in the relational database server market. But CA may be deterred from aggressive pursuit because of the 18% stake that EDS holds in ASK. The two companies are fighting court battles over software licensing practices, and EDS sits on ASK's board. Both CA and ASK refused to confirm or deny that merger talks are at hand.

If you or your company would like to help out with an early April "information technology airlift" to the besieged city of Sarajevo, Bosnia, the East West Foundation of Boston is seeking donations of computer technology, laptops and radio station equipment. For more information, call Alex Randall at (617) 542-0555. To get in touch with Computerworld about news items or tips, call our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News Editor Maryfran Johnson can be reached via the Internet at mjohnson@cw.com or MCI Mail at 590-8017.

PEOPLE WHO HAVEN'T EXPERIENCED OUR 1-2-3 WORKGROUP FEATURES PROBABLY HAVE A FEW QUESTIONS.

The problem is this: while many people might need to work on the same spreadsheet data, most spreadsheet software can't manage this process. Only Lotus® 1-2-3® Release 4 for Windows™ lets you share data and ideas, collaborate with co-workers, and work the way you work best—in a team.

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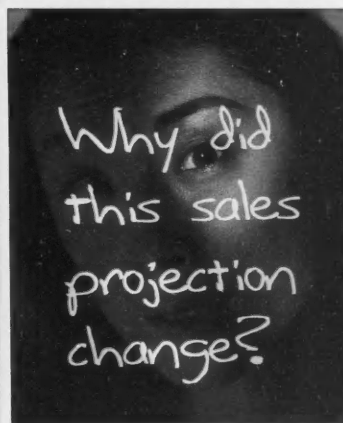
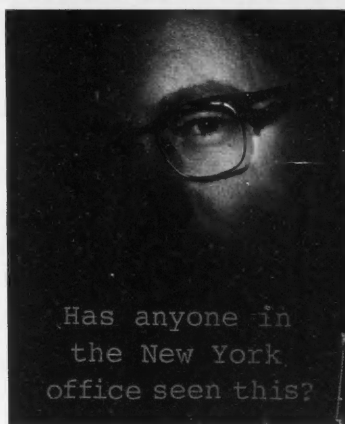
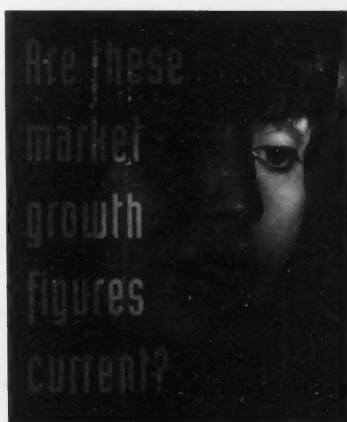
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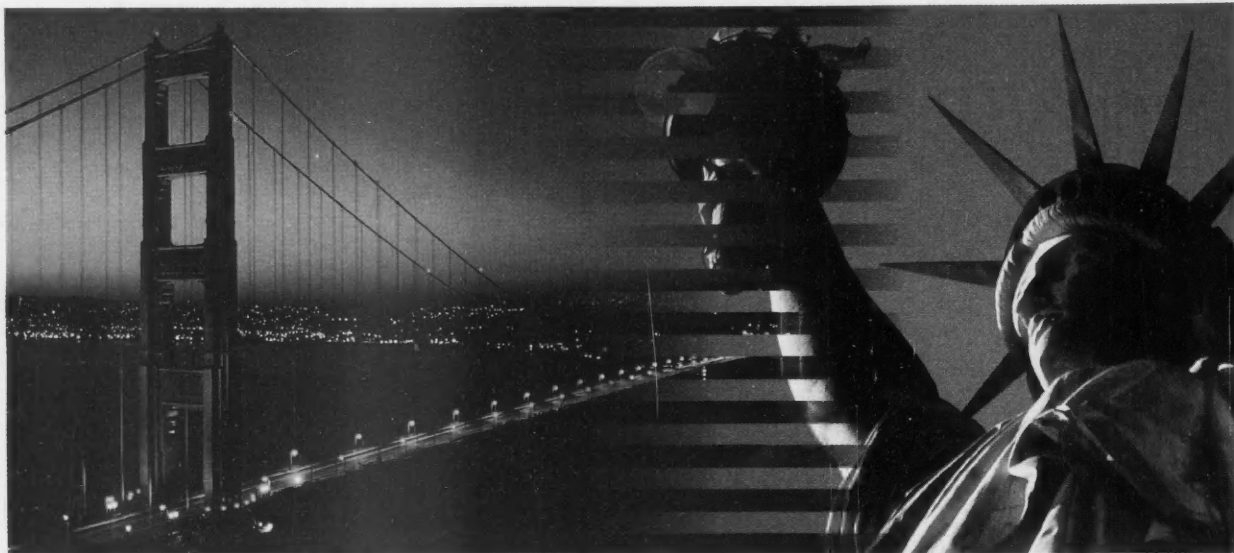
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